BUCKEYE PIPELINE FACILITY (DAR SITE ID #106)

Address:	355 Railroad Avenue, Long Island City, Queens (Often given as 20-35 Greenpoint Avenue)
Tax Lot Parcel(s):	Queens Block 294, Lot 335
Latitude:	40.736804
Longitude:	-73.942911
Regulatory Programs/ Numbers/Codes:	SPDES No. 0200441, USEPA ID No. NYD982189334, NYSDEC Spill Nos. 8605941, 9512145, 9813881, and 9813884
Analytical Data Status:	☐ Electronic Data Available ☒ Hardcopies only ☐ No Data Available

1 SUMMARY OF CONSTITUENTS OF POTENTIAL CONCERN (COPCs) TRANSPORT PATHWAYS TO THE CREEK

The current understanding of the transport mechanisms of COPCs from the upland portions of the Buckeye Pipeline Facility site (site) to Newtown Creek is summarized in this section and Table 1 and supported in the following sections.

Overland Transport

No specific evidence of overland transport was identified in the available site records. No stormwater infrastructure was identified on available site records. Based on the site topography, stormwater at the site is expected to infiltrate into the ground or flow overland towards Newtown Creek (see Figure 1). Several reported spills have occurred at the site (EDR 2010). Overland transport is a potentially complete historical and current pathway.

Bank Erosion

No specific evidence of bank erosion was identified in the available site records. Soil and groundwater contamination has been identified in several areas on the site (EDR 2010; EMS 2004). A wooden bulkhead extends along the 250-foot shoreline (see Attachment 1). A documented seep through the bulkhead was reported in 1987 (NEPCCO 1987). This is a potentially complete historical pathway. There is insufficient evidence to make a current pathway determination.

Groundwater

Light nonaqueous phase liquid (LNAPL) and dissolved petroleum hydrocarbons have been present beneath the site since at least 1987 (NEPCCO 1987; EMS 2004, 2009). Groundwater at the site generally flows south/southwest toward Newtown Creek and appears to be influenced by a variety of factors, including seasonal precipitation, varying backfill placement, compaction, ongoing LNAPL recovery operations, and tidal fluctuations (NEPCCO 1987; EMS 2004). Six 12-inch-diameter underground petroleum conveyance pipelines traverse the site and continue out into Newtown Creek. The backfill surrounding the pipeline has greater permeability and porosity than the native soils. As a result, surface water infiltrates preferentially in the backfilled areas (Batson 1965; EMS 2004). Groundwater is a complete historical pathway and a potentially complete current pathway.

Overwater Activities

Reviewed information did not identify current or historical overwater activities at the site. Six 12-inch-diameter underground petroleum conveyance pipelines traverse the site and continue out into Newtown Creek (Batson 1965). There is insufficient evidence to make a current or historical pathway determination.

Stormwater/Wastewater Systems

Information available for review did not discuss stormwater or wastewater management practices prior to 1987. In 1987 a groundwater/LNAPL recovery and treatment system was installed at the site. The system was designed to recover and remove gasoline (i.e., LNAPL) from groundwater by a 24-inch-diameter recovery well. Recovered LNAPL was pumped to a 500-gallon tank, and groundwater was pumped through granular activated carbon (GAC) canisters prior to discharge into Newtown Creek (NEPCCO 1987; EMS 2004, 2009). The discharge was permitted through the State Pollution Elimination Discharge System (SPDES) permit issued to the site by the New York State Department of Environmental Conservation (NYSDEC) since 1991 (NYSDEC 1991, 2011). The permit limits and exceedances are summarized in Section 9.3.

No stormwater infrastructure was identified on available site drawings or aerial photos. Stormwater is not covered under the site's existing SPDES permit (NYSDEC 1991). Based on the site topography, stormwater at the site is expected to infiltrate into the ground or flow

overland towards Newtown Creek (see Figure 1). Direct discharge of stormwater and wastewater is a complete historical pathway and potentially complete current pathway.

This site is within the Bowery Bay Water Pollution Control Plant (WPCP) sewershed. Stormwater and wastewater discharges from the site are discharged to separate municipal systems. The municipal stormwater system discharges to Newtown Creek without treatment (NYCDEP 2007). Stormwater is not covered under the site's existing SPDES permit and no information about on-site stormwater infrastructure was identified in documents available for review (NYSDEC 1991). Wastewater is conveyed to the WPCP for treatment prior to discharge. Although wastewater discharges from the site flow into a separate local municipal system, it is likely that the separate local system flows into a larger combined system prior to reaching the treatment plant. When the combined flows exceed the system's capacity, untreated combined sewer overflows (CSOs) are discharged to Newtown Creek (NYCDEP 2007). There is insufficient evidence to make a current or historical pathway determination.

Air Releases

Information related to air emissions or releases was not identified in the available historical information reviewed. There is insufficient evidence to make a current or historical pathway determination.

2 PROJECT STATUS

A summary of investigation and remedial activities at the site is provided in the following table:

Activity		Date(s)/Comments
Phase 1 Environmental Site Assessment	☐	
Site Characterization	☒	1987, 1999, and 2004
Remedial Investigation	☐	
Remedy Selection	☐	
Remedial Design/Remedial Action Implementation	☒	Interim remedial action in 1987; installation and operation of one LNAPL recovery well
Use Restrictions (Environmental Easements or	☐	

Activity		Date(s)/Comments
Institutional Controls)		
Construction Completion	☐	
Site Closeout/No Further Action Determination	☐	

Note:
LNAPL – light nonaqueous phase liquid

3 SITE OWNERSHIP HISTORY

Respondent Member: ☐ Yes ☒ No

Owner	Years	Occupant	Types of Operations
Tidewater Oil Company/ Getty	Unknown – 1971	Long Island Railroad (Unknown – 1966)	Portion of Greenpoint Avenue rail yard (Unknown – 1966)
Rosil Realty	1971 – 1972	Buckeye Pipeline Company (1966 – present)	Petroleum pipeline (1966 – present)
Buckeye Pipeline Company	1972 – present		

Note:
Additional discussion and sources provided in Section 6.

4 PROPERTY DESCRIPTION

The property occupies approximately 1 acre adjacent to Newtown Creek. The site slopes gently down from approximately 5 feet above mean sea level on the northeast property boundary to Newtown Creek on the southwest property boundary. A wooden bulkhead extends across the 250-foot shoreline. The confluence of Dutch Kills and Newtown Creek is located approximately 700 feet northwest of the northwestern property boundary (see Figure 1).

The property is adjoined by Newtown Creek to the west and southwest, Railroad Avenue and railroad tracks to the north and northeast, Hugo Neu Schnitzer (aka SIMS Hugo Neu

DAR Site ID #125) to the west, and Maspeth Supply to the east. The area is zoned M3-1. M3 districts are designated for areas with heavy industries that generate noise, traffic, or pollutants (NYCDCP 2011).

The most detailed available site drawing is a 1987 mechanical plot plan showing details of the pipeline's operational features (see Attachment 1). More recent site plans available for review are generally schematic. The 2010 aerial indicates that the current site layout and the majority of the structures from the 1987 plan remain. A 2010 aerial photograph of the site is presented as Figure 1; the 1987 mechanical plot plan is included as Attachment 1; and a 2007 schematic of the site is included as Attachment 2.

Site features shown on the 1987 plan include a 430-square-foot concrete masonry unit (CMU) control building, two sample sheds, a 0.3-acre stoned parking lot on the southeast portion of the property, and a 0.5-acre stoned yard on the northwest and western portions of the property. Additional site features include a substation, batteries, and a foam fire suppression system (see Attachment 1).

5 CURRENT SITE USE

The site is used for transfer of petroleum products including fuel, oil, gasoline, and naphtha to or from oil terminals in the Greenpoint area via primarily underground pipelines (EMS 2004). Petroleum storage and conveyance infrastructure at the site include six 12-inch-diameter underground conveyance pipes that cross the northeastern property boundary, travel southwest across the property, make a 90-degree turn near the south corner of the property, travel parallel to the creek, cross the northwestern property line, and continue out into Newtown Creek. In addition to the underground conveyance pipelines, there are multiple sizes (from 2- to 18-inch-diameter) of aboveground and underground piping, a 52,000-gallon aboveground relief tank surrounded by a 1-foot-tall steel containment structure, two 670-gallon sump tanks (one for fuel and one for gas), and ancillary equipment (i.e., valves and pumps) at the site. A central hydraulic unit and associated conveyance pipes are also present (see Attachment 1; Batson 1965; EMS 2004).

6 SITE USE HISTORY

By 1911, the site was a smaller portion of the larger Long Island Rail Road (LIRR) Greenpoint Avenue Rail Yard (Sanborn 1911; USACE 1966). The property line extended out to the pier head line of Newtown Creek, as recognized by the U.S. Army Corps of Engineers (USACE) in their 1916 report (Bates 1916; Rosil Realty 1972). The LIRR extended its Newtown Creek wharf in 1870, adding 550 feet of dock (on the adjoining property). Historical maps show three inlets, east of Dutch Kills on Newtown Creek, where barges docked (Sanborn1911, 1950; USACE 1966). Barges unloaded manure to freight cars parked on a track laid on the wharf (BPL 1870; Roessler 1914).

In 1964, the Long Island Pipe Line Corporation filed for a permit to build a pipeline under a part of Newtown Creek near Dutch Kills, Queens, to North Henry Street, Brooklyn (Batson 1965). A 1966 agreement with the Tidewater Oil Company allowed the Long Island Pipe Line Corporation to "install, maintain, repair, and replace" pipeline on Long Island City Terminal Lands (Getty Oil Company 1971). The Long Island Pipe Line Corporation's plan included six 12.75-inch petroleum pipelines, seamless and coated in concrete. Dredged soil from the bottom of the creek was stored at the Tidewater Oil Company lot and then used as backfill or disposed of in accordance with USACE policy (Batson 1965). The pipeline started operation on December 9, 1966 (NYC 1967).
In 1964, The Pennsylvania Railroad owned a 50-percent interest in the Long Island Pipe Line Corporation and merged with the Buckeye Pipe Line Company (Buckeye; NYT 1964; Moody's 1970). Buckeye merged with the Long Island Pipeline Corporation on December 22, 1966 (NYC 1967). The Pennsylvania Railroad sold the LIRR in June 1965 to the Metropolitan Commuter Transportation Authority (Moody's 1970).

Sometime between 1966 and 1970, possibly at the time of the pipeline installation, the docking inlets on the adjoining property were filled (Sanborn 1970, 1979). Buckeye purchased the pipeline site in 1972 (Rosil Realty 1972)

7 CURRENT AND HISTORICAL AREAS OF CONCERN AND COPCs

The current understanding of the historical and current potential upland and overwater areas of concern at the site is summarized in Table 1. The following sections provide brief discussion of the potential sources and COPCs at the site requiring additional discussion.

7.1 Uplands

The site submitted an initial notification of hazardous waste activity on July 13, 1987, as a large quantity generator (Buckeye 1987b). Available manifest documentation indicates that in 1989, the site shipped 550 gallons of D001 (ignitable) characteristic waste. In 1992, 3,000 pounds of D001 and D018 (toxic/benzene) characteristic waste were shipped from the site. In 1994, the site submitted a change in notification of regulated waste activity, stating that it would be generating D018 and D008 (toxic/lead; Buckeye 1994). In 1996, the site generated 17,500 gallons of D001 waste. In 1999 and 2006 the site was classified as a non-generator (Buckeye 1992; EDR 2010). No other information related to waste generation was located.

Potential historical and current contaminant sources at the site include railroad cars and tracks, tanks, pipelines, and ancillary equipment that transport and store petroleum products (including gasoline, fuel oil, and hydraulic oil), batteries, fire suppression foam, and transformer fluid. The COPCs for these sources include total petroleum hydrocarbon (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), metals, polychlorinated biphenyl (PCBs), and other semi-volatile organic compounds (SVOCs).

7.2 Overwater Activities

The pipeline extends into the water from the site and crosses Newtown Creek (Batson 1965). Information about overwater activities at the site was not identified in documents available for review.

7.3 Spills

Documented spills at the site are summarized as follows:

- On December 18, 1986, an equipment failure resulted in a gasoline release to surface water (NYSDEC Spill No. 8605941) and Newtown Creek was impacted (EDR 2010). On March 10, 1987, the U.S. Coast Guard notified site representatives that ongoing oil seepage through the wooden bulkhead into Newtown Creek had been observed and that the site was in violation of the Federal Water Pollution Act. The site was required to provide a plan for addressing the seepage before April 15, 1987 (Brooks 1987; Newman 1987; EDR 2010). The resulting investigation and remedial activities are described in sections 9.1 and 9.2. The spill case was closed on December 18, 1986 by NYSDEC.
- On December 27, 1995, an equipment failure resulted in a gasoline release to groundwater (NYSDEC Spill No. 9512145). The release was identified during an inspection of MW-7. One quart of LNAPL was bailed from MW-7 with little or no recharge. Visual inspection and pressure testing of the pipelines indicated that the release was not from a pipeline leak (EDR 2010). The spill case was closed on January 26, 1996 by NYSDEC.
- On February 16, 1999, a leak through a flange at a pig exit section of plumbing resulted in a release of approximately 20 to 30 barrels of unleaded gasoline and unknown quantities of methyl tert-butyl ether (MTBE) on the east side of the property (NYSDEC Spill No. 9813881). A separate spill on the same day caused release of an unknown amount of gasoline due to worker error during transfer (NYSDEC Spill No. 9813884) that was consolidated under NYSDEC Spill No. 9813881. Buckeye deployed a 150-foot hard boom and two sorbent booms to contain the LNAPL. The leak was contained and did not enter the creek; however groundwater was impacted. A vacuum truck pumped the gasoline mixed with foam into a truck for disposal off site. A bulldozer was used to remove impacted soil and gravel from an area approximately 40 feet by 15 feet by 1.5 feet deep. The site reported that 40 barrels of LNAPL were recovered. Ninety-eight tons of soil were excavated for thermal treatment and off-site recycle. Buckeye planned to dig a recovery trench 6 feet to 8 feet below ground surface (bgs) on the south side of the parking lot and near the surge tank to recover free LNAPL (EDR 2010). The spill case for NYSDEC Spill No. 9813881 is not closed according to NYSDEC.
- On November 12, 2003, an overflow of gasoline containing MTBE was caused by an open relief valve. The Environmental Data Resources, Inc. (EDR) listing indicates

that the volume of the release was minimal, corrective action was taken, and the file was closed by NYSDEC the following day (EDR 2010).

8 PHYSICAL SITE SETTING

8.1 Geology

Geologic conditions at the site have been characterized to depths of 15 feet bgs. A 2004 investigation report described observed site lithology from the ground surface downward as follows:

- Stone from 0 to 0.5 feet bgs
- Compacted gray silty clay material from 0.5 to 1 foot bgs
- Orange silt with fine sand from 1 to 3 feet bgs
- Gray silt with fine to medium sand from 3 to 10 feet bgs

The report noted that portions of the site, including near the pipelines and areas of previous excavation, contained an orange, sandy fill material to a depth of approximately 6 to 8 feet bgs. The fill was described as more porous and permeable than the surrounding subsurface materials (EMS 2004).

8.2 Hydrogeology

Hydrogeologic conditions at the site have been characterized for the unconfined groundwater unit to a depth of 15 feet bgs. Groundwater elevations at the site have been measured in a network of monitoring wells using depth to water field measurements in relation to a known surveyed reference point (e.g., top of casing). Monitoring well locations are shown on Attachment 2. The depth to groundwater at the site has been reported to range between less than 1 foot to 5 feet bgs (EMS 2004). Groundwater elevations documented in 1987, prior to installation of the LNAPL recovery system, are shown in Attachment 3 (NEPCCO 1987). Groundwater elevations from the 2004 site characterization (EMS 2004) and the most recent quarterly monitoring event available for review are included as Attachments 4 and 5, respectively (EMS 2009).

As part of the 2004 investigation, slug testing was performed at four monitoring wells (MW-4, MW-9, MW-10, and MW-11) to evaluate groundwater characteristics. Slug testing was performed using a rising head slug test and evaluated using the Bouwer and Rice Method. Calculated hydraulic conductivity values ranged from 1.27 by 10^{-2} feet per day (MW-9) to 7.73 by 10^{-1} feet per day (MW-4; EMS 2004).

In addition to the slug testing, a tidal study was performed during the 2004 investigation. The tidal study was conducted at four monitoring wells (MW-4, MW-10, MW-11, and MW-12) to determine the tidal influence on the groundwater levels at the site. Pressure transducers with internal data loggers were used to collect water level measurements over a 24-hour period. Surface water elevations were obtained from tide charts for Hunters Point in Newtown Creek. The results of the tidal study indicated that groundwater is influenced by tidal fluctuations and ranged from 0.5 to 1 foot with a 1 to 2 hour lag time (EMS 2004).

Generally shallow unconfined groundwater flow at the site is to the southwest toward Newtown Creek. However, localized groundwater flow direction is influenced by numerous factors, including the operation of recovery well, tidal fluctuations, and the heterogeneity of subsurface materials at the site (i.e., backfilled areas; NEPCCO 1987; EMS 2004).

9 NATURE AND EXTENT (CURRENT UNDERSTANDING OF ENVIRONMENTAL CONDITIONS)

9.1 Soil

Soil Investigations	☒ Yes ☐ No
Bank Samples	☐ Yes ☐ No ☒ Not Applicable
Soil-Vapor Investigations	☐ Yes ☒ No

9.1.1 Soil Investigations

Soil sampling was completed during the 2004 Site Characterization in preparation for construction of footers for a subsurface cable run tray. Six soil samples (samples P-1 through P-6) were collected from soil borings advanced to a depth of 5 feet bgs near RW-1, and eight soil samples (samples H-1 through H-8) were collected from excavations at a depth

of approximately 5 feet bgs in the central area of the site. Soil samples were also collected during the installation of MW-11 and -12. Attachment 6 shows the soil sampling locations (EMS 2004).

Six soil samples (P-1, P-3, P-6, H-1, H-4, and H-6) were submitted for laboratory analysis of VOCs and SVOCs. Analytical results are summarized in Attachments 7 and 8. Benzene, ethylbenzene, xylene, benzo(a)fluranthene, chrysene, and 2,4 dinitrophenol were detected (EMS 2004). The following table provides the maximum concentrations detected in soil for BTEX.

Analyte	Units	Maximum Soil Concentration
VOCs		
Benzene	mg/kg	2.6
Toluene	mg/kg	0.78
Ethylbenzene	mg/kg	15
Xylene	mg/kg	23.7

Note:
mg/kg – milligrams per kilogram
VOC – volatile organic compound

9.2 Groundwater

Groundwater Investigations ☒ Yes ☐ No
Nonaqueous Phase Liquid (NAPL) Presence ☒ Yes ☐ No
Dissolved COPC Plumes ☒ Yes ☐ No
Visual Seep Sample Data ☒ Yes ☐ No ☐ Not Applicable

9.2.1 Groundwater Investigations

Groundwater monitoring and remedial infrastructure at the site includes 12 monitoring wells. MW-1 to -7 were installed in February 1987; MW-8 and -9 were installed in February 1999; MW-10 was installed in June 1999; and MW-3R, MW-11, and MW-12 were installed in July 2004 (EMS 2004). The site began conducting ongoing quarterly gauging and visual inspections and measurements of LNAPL in 1987 when MW-1 through -7 were installed. Groundwater investigations conducted in 2004 included slug testing at select monitoring

wells and a tidal study at select monitoring wells (EMS 2004). Since 2004, the site has conducted quarterly groundwater monitoring and reported the results to NYSDEC (EMS 2008, 2009).

The following table provides the maximum BTEX concentrations detected during these monitoring events.

Analyte	Units	Maximum Groundwater Concentration (6/10/04)	Maximum Groundwater Concentration (2004 – 2009)
VOCs			
Benzene	µg/L	230	1,280
Ethylbenzene	µg/L	600	1,600
Xylene	µg/L	8.700	11,000
Toluene	µg/L	2,400	2,600

Note:
µg/L – micrograms per liter

9.2.2 NAPL Presence

The initial subsurface investigation was initiated in 1987, following the observation by the U.S. Coast Guard of petroleum sheen emanating into Newtown Creek from the shoreline wooden bulkhead at the site. The investigation identified LNAPL in MW-1, MW-3, and MW-7. Two of these monitoring wells (MW-1 and MW-3) are located along the nearshore areas of the site, and one monitoring well (MW-7) is located in the central area. Monitoring well locations are shown on Attachment 2 (Brooks 1987; NEPCCO 1987).

A groundwater/LNAPL recovery and treatment system was installed at the site in 1987. System components include a 24-inch-diameter well used to recover LNAPL and a 500-gallon tank used to store recovered LNAPL. Details on the further management of recovered LNAPL were not identified in the available information reviewed (NEPCCO 1987; EMS 2004). The most recent cumulative LNAPL recovery graph available for review is from a July 2008 quarterly monitoring report and is included as Attachment 9. The graph

indicates that approximately 350 gallons of LNAPL have been recovered since April 1993 (EMS 2008).

Since 1987, the well network has been monitored for LNAPL on a monthly basis. LNAPL was observed in MW-8 in March 1999 and MW-12 in August 2004. In both instances a passive LNAPL recovery bailer was installed and remained in place for several months until no further LNAPL was observed. Fingerprint analysis conducted on samples collected from MW-12 and RW-1 in 2004 indicated that the origin of the LNAPL was a historical release prior to 1994 (EMS 2004).

The most recent quarterly monitoring report available for review was for monitoring activities performed in June 2009. Although it was not observed in any of the monitoring wells, 0.01 feet of LNAPL was observed in RW-1 (EMS 2009).

9.2.3 Dissolved Contaminant Plume

Groundwater monitoring was conducted during the site characterization in 2004. Results are summarized in Attachment 10. Several VOCs, including acetone, benzene, ethylbenzene, isopropylbenzene, xylene, MTBE, methylene chloride, butylbenzene, propylbenzene, toluene, napthalene, and trimethylbenzene, were detected (EMS 2004).

Quarterly groundwater monitoring for dissolved constituents has been performed and reported to NYSDEC since June 2004. Groundwater samples collected from monitoring wells are analyzed for VOCs (EMS 2004). Analytes detected during quarterly monitoring since 2004 include BTEX, MTBE, naphthalene, cumene, and acetone. A summary of historical detections is included as Attachment 11 (EMS 2009).

The most recent quarterly monitoring report available for review was for monitoring activities performed in June 2009. Samples were collected from all 12 monitoring wells using a disposable bailer. Acetone, BTEX, cumene, and napthalene were detected (EMS 2009).

Petroleum storage and conveyance infrastructure at the site include six 12-inch-diameter underground conveyance pipes that cross the northeastern property boundary, travel

southwest approximately 160 feet across the property, make a 90-degree turn near the south corner of the property, travel approximately 180 feet parallel the creek, cross the northwestern property line, and continue out into Newtown Creek. The backfill surrounding the pipeline has greater permeability and porosity than the native soils. As a result, surface water infiltrates preferentially in the backfilled areas. The backfill may provide a preferential pathway to the creek (EMS 2004).

9.2.4 Groundwater Seep Observations

In 1987 the U.S. Coast Guard observed petroleum emanating from the bulkhead at the site. NYSDEC referred to this as a petroleum leachate condition. The subsequent investigation resulted in the installation of the groundwater/LNAPL recovery system. During the 1987 field investigations by NEPCCO, Inc., a hydrocarbon leachate was observed along the bulkhead between MW-1 and MW-3. Seep observations are not included as part of the ongoing quarterly groundwater monitoring, and no additional seep information was identified in the available site records (NEPCCO 1987).

9.2.5 Groundwater Summary

LNAPL and dissolved petroleum hydrocarbons have been present beneath the site since at least 1987 (NEPCCO 1987; EMS 2004, 2009). The most recent monitoring report available for review indicates that that 0.01 feet of LNAPL was observed in the recovery well (RW-1) on June 25, 2009. LNAPL was not observed in any of the monitoring wells (EMS 2009).

9.3 Surface Water

Surface Water Investigation	☐ Yes	☒ No
SPDES Permit (Current or Past)	☒ Yes	☐ No
Industrial Wastewater Discharge Permit	☐ Yes	☒ No
Stormwater Data	☐ Yes	☒ No
Catch Basin Solids Data	☐ Yes	☒ No
Wastewater Data	☒ Yes	☐ No

9.3.1 Stormwater and Wastewater Systems

Stormwater is not covered under the site's existing SPDES permit, and no information about on-site stormwater infrastructure was identified in documents available for review (NYSDEC 1991). In areas in which stormwater infrastructure does not exist, based on the site topography, stormwater at the site is expected to infiltrate into the ground or flow overland towards Newtown Creek (see Figure 1).

This site is within the Bowery Bay WPCP sewershed. Stormwater and wastewater discharges from the site are discharged to separate municipal systems. The municipal stormwater system discharges to Newtown Creek without treatment. Wastewater is conveyed to the WPCP for treatment prior to discharge. Although wastewater discharges from the site flow into a separate local municipal system, it is likely that the separate local system flows into a larger combined system prior to reaching the treatment plant. When the combined flows exceed the system's capacity, untreated CSOs are discharged to Newtown Creek (NYCDEP 2007).

9.3.2 SPDES Permit

On December 18, 1986, an equipment failure resulted in a petroleum release (NYSDEC Spill No. 860594), and Newtown Creek was impacted (EDR 2010). On March 10, 1987, the U.S. Coast Guard notified site representatives that ongoing oil seepage through the wooden bulkhead into Newtown Creek had been observed, and the site was in violation of the Federal Water Pollution Act. The site was required to provide a plan for addressing the seepage before April 15, 1987 (Brooks 1987; EDR 2010).

In a April 28, 1987 letter, the site proposed installation of a groundwater/LNAPL recovery well and requested an emergency discharge permit for groundwater discharge to the creek from the NYSDEC. NYSDEC confirmed the presence of LNAPL (i.e., gasoline) floating on the groundwater and the seepage through the bulkhead into Newtown Creek. NYSDEC approved the emergency discharge request on May 26, 1987, with the following stipulations: 1) the approval was only valid for 6 months; 2) a SPDES permit application had to be submitted within 30 days; and 3) monitoring of initial discharge must be done in

conformance with the discharge limits and monitoring requirements shown in the following table (Newman 1987):

Permit Type	Permit Number	Effective Date	Outfalls	Volume	Frequency-Parameters (Limit)
Emergency	NA	05/26/87	001	NA	Monthly instantaneous – flow
					Monthly grab – oil and grease (15 mg/L)
					Monthly grab – pH (6.0 – 9.0)
					Quarterly grab – benzene[1]
					Quarterly grab – toluene[1]
					Quarterly grab – xylene[1]

Notes:
1 – The action level for these parameters is 0.1 mg/L for the arithmetic sum of all three.
mg/L – milligram per liter
NA – not applicable

The SPDES permit application was submitted on June 29, 1987. The operation contributing to the discharge flow is described as a groundwater drawdown pump/recovery well for floating LNAPL. The discharge flow is given as 576 gallons per day (gpd). The permit application indicates that at the time of the submittal, the system had been shut down because the action level (specified in the temporary approval letter) for benzene, toluene, and xylene had been exceeded. After the GAC unit was constructed and operational, the site would resume discharging to the creek.

The permit was issued on February 2, 1991, and it was subsequently renewed on a 5-year cycle. The most recent renewal was February 2, 2011. Permit parameters and limitations are summarized as follows (NYSDEC 1991; NYSDEC 2011):

Permit Type	Permit Number	Effective Date	Outfalls	Volume	Frequency-Parameters (Limit)
SPDES	SPDES No. 0200441	02/01/91 (Renewed 02/01/96, 02/01/01, 02/01/06, 02/01/11, Expires 01/31/16)	001 Recovery Well Carbon Treatment	<1000 gpd	Monthly instantaneous – flow
					Monthly grab – oil and grease[1] (15 mg/L daily maximum)
					Monthly grab – pH (6.0-9.0)
					Monthly grab – benzene (0.010 mg/L daily maximum)
					Monthly grab – toluene

Permit Type	Permit Number	Effective Date	Outfalls	Volume	Frequency-Parameters (Limit)
					(0.010 mg/L daily maximum)
					Monthly grab – xylene (0.010 mg/L daily maximum)
					Monthly grab – ethylbenzene (0.010 mg/L daily maximum)
					Monthly grab – lead (total) (1.3 mg/L daily maximum)

Notes:
1 – One, two, or three samples may be collected and analyzed per sampling event. The samples must be obtained at 15-minute intervals during the first 15 minutes of discharge; if multiple samples are taken, the reported value will be the arithmetic average of the separate analysis.
gpd – gallons per day
mg/L – milligrams per liter
SPDES – State Pollutant Discharge Elimination System

On September 2, 1999, the site requested approval to discharge water from a hydrostatic pipeline test at Outfall 001. The hydrostatic test was necessary because the pipeline had been moved to accommodate the Newtown Creek wastewater treatment plant (WWTP) expansion. The testing involved staging three frac tanks at the site to collect the 60,000 gallons of water used for the test and discharging the water at Outfall 001. The discharge was approved with the stipulation that one sample would be collected for every 20,000 gallons and analyzed for the permit parameters prior to discharge. If the sample concentrations exceeded the permit limitations, the water could not be discharged (Mengel 1999; Southwell 1999).

9.3.3 Wastewater Data

Analytical results reported on the 1987 permit application are summarized as follows (Horwath 1987):

Report Date	Constituent	Result	Unit	Limit
Initial SPDES application (6/29/87)	Oil and grease	2	mg/L	None
	Benzene	5	mg/L	None
	Ethylbenzene	13	mg/L	None
	Toluene	8	mg/L	None
	pH	6.2	mg/L	None

Notes:
mg/L – milligrams per liter
SPDES – State Pollutant Discharge Elimination System

Since the original permit was issued in 1991, the site has submitted a monthly discharge monitoring report containing the effluent sampling results from the GAC treatment unit prior to discharge to Newtown Creek. Exceedances identified in available documentation are summarized as follows (Discharge Monitoring Reports 1994 and 1999 to 2008):

Report Date	Constituent	Result	Unit	Limit	Source
09/90[1]	Benzene	0.128	ppm	0.010 ppm	(Mandala 1991)
	Xylene	0.036	ppm	0.010 ppm	
11/91	Benzene	0.250	ppm	0.010 ppm	(Newman, 1992)
	Toluene	0.095	ppm	0.010 ppm	
	Xylene	0.550	ppm	0.010 ppm	
	Ethylbenzene	0.083	ppm	0.010 ppm	
12/91	Benzene	0.031	ppm	0.010 ppm	
10/06	pH	Not recorded	-	6.0-9.0 S.U.	(Rowlett 2006)
08/08	Xylene	0.08	ppm	0.010 ppm	(USEPA ECHO Database)
	Toluene	0.03	ppm	0.010 ppm	
	Ethylbenzene	0.01	ppm	0.010 ppm	

Notes:
1 – Prior to permit issuance
ECHO – Enforcement and Compliance History Online
ppm – parts per million
S.U. – standard units
USEPA – U.S. Environmental Protection Agency

Annual NYSDEC inspection reports available for review indicate aside from the exceedances (described previously) and occasional technical issues related to sample collection and analysis (i.e., proper calibration of instruments and analysis outside of hold time), the site was generally deemed by inspectors to be in compliance with their permit (Mandala 1991; Newman 1992, 1994, and 1995; Burns 1999; Rowlett 2006). The U.S. Environmental Protection Agency (USEPA) Enforcement and Compliance History Online (ECHO) database indicates that the site received a notice of violation (NOV)-200018046 on August 18, 2009. Reported violations are shown in December 2009, December 2010, and June 2011; however additional details as to the nature of the violations are not provided (USEPA 2011).

9.3.4 Surface Water Summary

The site has been discharging effluent from a groundwater/LNAPL recovery and GAC treatment system to Newtown Creek since 1987 (EMS 2004). Initial discharges were authorized by NYSDEC, and a SPDES permit was issued to the site in 1991 and has been renewed on a 5-year cycle. The current permit will expire in 2016 (Newman 1987; NYSDEC 2011). The site has exceeded their permitted effluent limits on several occasions (Mandala 1991; Newman 1992; Rowlett 2006; USEPA 2011).

9.4 Sediment

Creek Sediment Data ☐ Yes ☐ No ☒ Not Applicable

Sediment investigation information was not found in reviewed documents.

9.5 Air

Air Permit ☐ Yes ☒ No

Air Data ☐ Yes ☒ No

Information related to air emissions was not found in reviewed documents.

10 REMEDIATION HISTORY (INTERIM REMEDIAL MEASURES AND OTHER CLEANUPS)

On February 16, 1999, a leak through a flange at a pig exit section of plumbing resulted in a release of approximately 20 to 30 barrels of unleaded gasoline on the east side of the property (NYSDEC Spill No. 9813881 and 9813884). Buckeye deployed a 150-foot hard boom and two sorbent booms to contain the LNAPL. The leak was contained and did not enter the creek; however groundwater was impacted. A vacuum truck pumped the gasoline mixed with foam into a truck for disposal off site. A bulldozer was used to remove impacted soil and gravel from an area approximately 40 feet by 15 feet by 1.5 feet deep. The site reported that 40 barrels of LNAPL were recovered and 98 tons of soil were excavated for thermal treatment and off-site recycle (EDR 2010).

In 1987 a groundwater/LNAPL recovery and treatment system was installed at the site. The system was designed to recover and remove gasoline (i.e., LNAPL) from groundwater by a 24-inch-diameter recovery well. Recovered LNAPL is pumped to a 500-gallon tank, and groundwater is pumped through GAC canisters prior to discharge into Newtown Creek (NEPCCO 1987; EMS 2004, 2009). The discharge is permitted through a SPDES permit originally issued to the site by the NYSDEC in 1991 and renewed in 1996, 2001, 2006, and 2011 (NYSDEC 2011). Ongoing LNAPL measurements and recovery are performed and reported quarterly to NYSDEC (EMS 2009).

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12 ATTACHMENTS

Figures

Figure 1 Site Vicinity Map: Buckeye Pipeline Facility

Tables

Table 1 Potential Areas of Concern and Transport Pathways Assessment - Buckeye Pipeline Facility

Supplemental Attachments

Attachment 1 1985 (Rev. 1987) Mechanical Plot Plan (Buckeye 1987a)
Attachment 2 Site Plan (EMS 2007)
Attachment 3 Hydraulic Gradient Map (NEPCCO 1987)
Attachment 4 Hydraulic Gradient and Hydrocarbon Distribution Map (EMS 2004)
Attachment 5 Hydraulic Gradient and VOC Distribution Map (EMS 2009)

Attachment 6	Soil Borings Location Map (EMS 2004)
Attachment 7	Table 2: Soil Characterization Analytical Results – VOCs (EMS 2004)
Attachment 8	Table 3: Soil Characterization Analytical Results – SVOCs (EMS 2004)
Attachment 9	Cumulative Product Recovery
Attachment 10	Table 15: Groundwater Characterization Analytical Results – VOCs (EMS 2004)
Attachment 11	Table 3: Summary of Historical Detections Monitoring Data Results – 2004 to 2009 (EMS 2009)

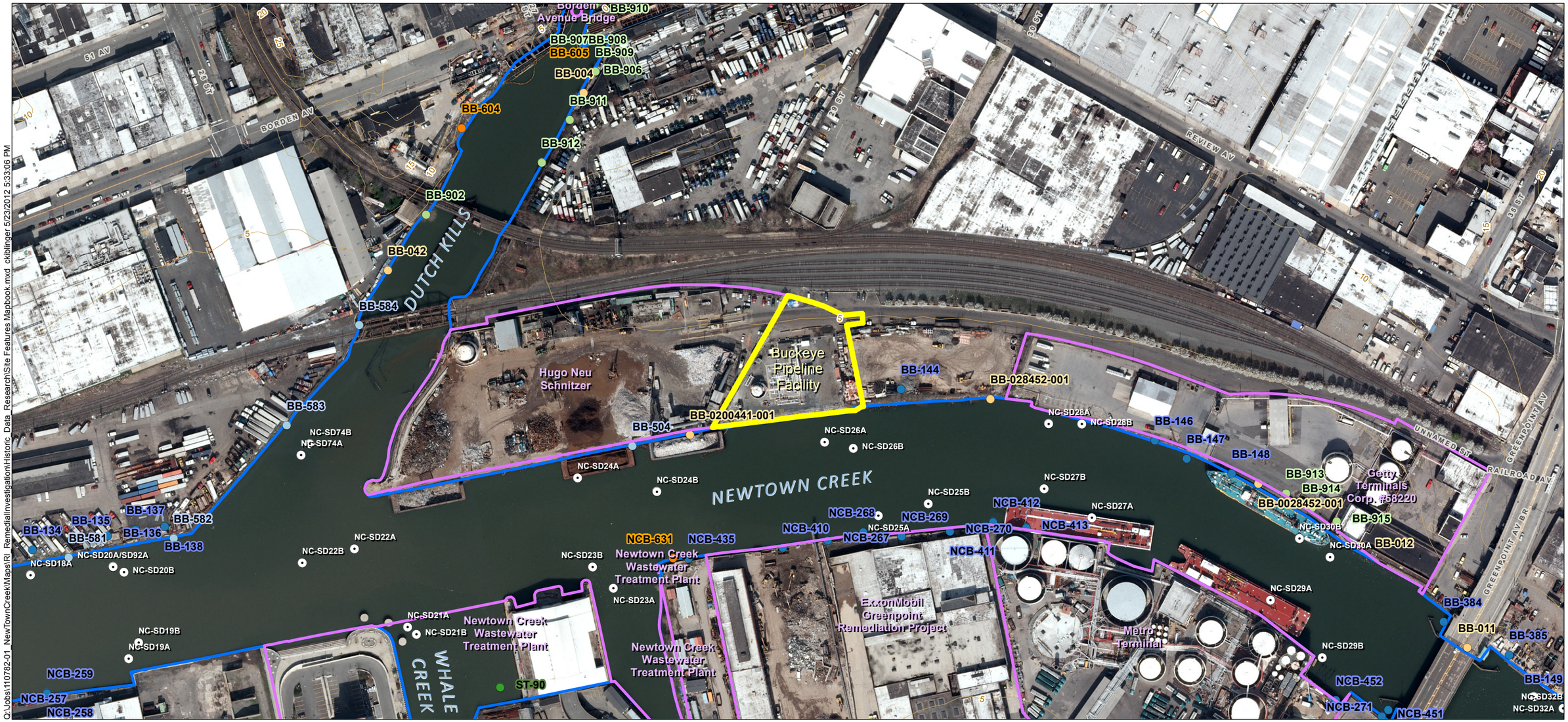
Table 1

Potential Areas of Concern and Transport Pathways Assessment – Buckeye Pipeline Facility

Potential Areas of Concern	Media Impacted					COPCs															Potential Complete Pathway					
						TPH			VOCs																		
Description of Areas of Concern	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	Creek Sediment	Gasoline-Range	Diesel – Range	Heavier – Range	Petroleum Related (e.g., BTEX)	VOCs	Chlorinated VOCs	SVOCs	PAHs	Phthalates	Phenolics	Metals	PCBs	Herbicides and Pesticides	Dioxins/Furans	Overland Transport	Groundwater	Direct Discharge – Overwater	Direct Discharge – Storm/Wastewater	Discharge to Sewer/CSO	Air Releases
Spills	√	√	√	?	?	√	?	?	√	√	?	?	√	?	?	√	?	?	?	√	√	?	√	?	?
Petroleum Conveyance Pipelines	?	?	?	?	?	√	√	√	√	√	?	√	√	?	?	√	?	?	?	?	?	?	?	?	?
Petroleum Storage Tanks	?	?	?	?	?	√	√	√	√	√	?	√	√	?	?	√	?	?	?	?	?	?	?	?	?
Transformer(s)	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	√	√	?	?	?	?	?	?	?	?
Batteries	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	√	?	?	?	?	?	?	?	?	?
Railroad Tracks/Cars (unknown – 1971)	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

Notes:
√ – COPCs are/were present in areas of concern having a current or historical pathway that is determined to be complete or potentially complete.
? – There is not enough information to determine if COPC is/was present in area of concern or if pathway is complete.
-- – Current or historical pathway has been investigated and shown to be not present or incomplete.

BTEX – benzene, toluene, ethylbenzene, and xylenes
COPC – constituents of potential concern
CSO – combined sewer overflow
PAH – polycyclic aromatic hydrocarbon
PCB – polychlorinated biphenyl
SVOC – semi-volatile organic compound
TPH – total petroleum hydrocarbon
VOC – volatile organic compound



Q:\Jobs\110782-01_NewTownCreek\Maps\RI_RemedialInvestigation\Historic_Data_Research\Site Features.Mapbook.mxd ckiblinger 5/23/2012 5:33:06 PM

- USEPA Sample Locations (Surface and Subsurface)
- Shoreline (NYC Dept. of Information Technology, 2006)
- USGS Nat'l Elev. Dataset 5-foot Contours
- Selected Site Property Boundary
- Neighboring Site Property Boundary

Outfall Class

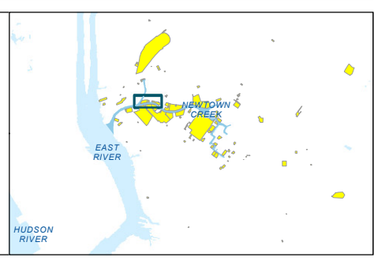
- Direct Discharge
- General
- Highway Drain
- Major Stormwater Outfall
- SPDES
- Storm Drain

NOTES:

1. Outfall Labeling: BB: Bowery Bay; NC(B/Q): Newtown Creek, Brooklyn/Queens; ST: Stormwater.
2. Outfall locations are preliminary, compiled, estimated data based on New York City Department of Environmental Protection (NYCDEP) maps and tabulated data and other resources. Many outfall locations were taken from the New York City Shoreline Survey Program: Newtown Creek Water Pollution Control Plant Drainage Area, NYCDEP, March 31, 2003. Other locations were taken from an excerpt from a similar report from 2008 (the complete report was not included in files available for review). Finally, some outfall locations were inherited from previous Anchor QEA and Newtown Creek Project work. Latitudinal and longitudinal data provided in the 2003 and 2008 NYCDEP reports were rounded to the nearest second. This resulted in potential outfall location discrepancies of up to approximately 200 feet. All outfall locations are currently under field verification.
3. Aerial Photos: New York State Division of Homeland Security and Emergency Services, 2010.
4. Site Boundaries are based on New York City parcels data.
5. Coarse topographic contours are derived from U.S. Geological Survey 10-meter data.

Feet

0 100 200 300 400



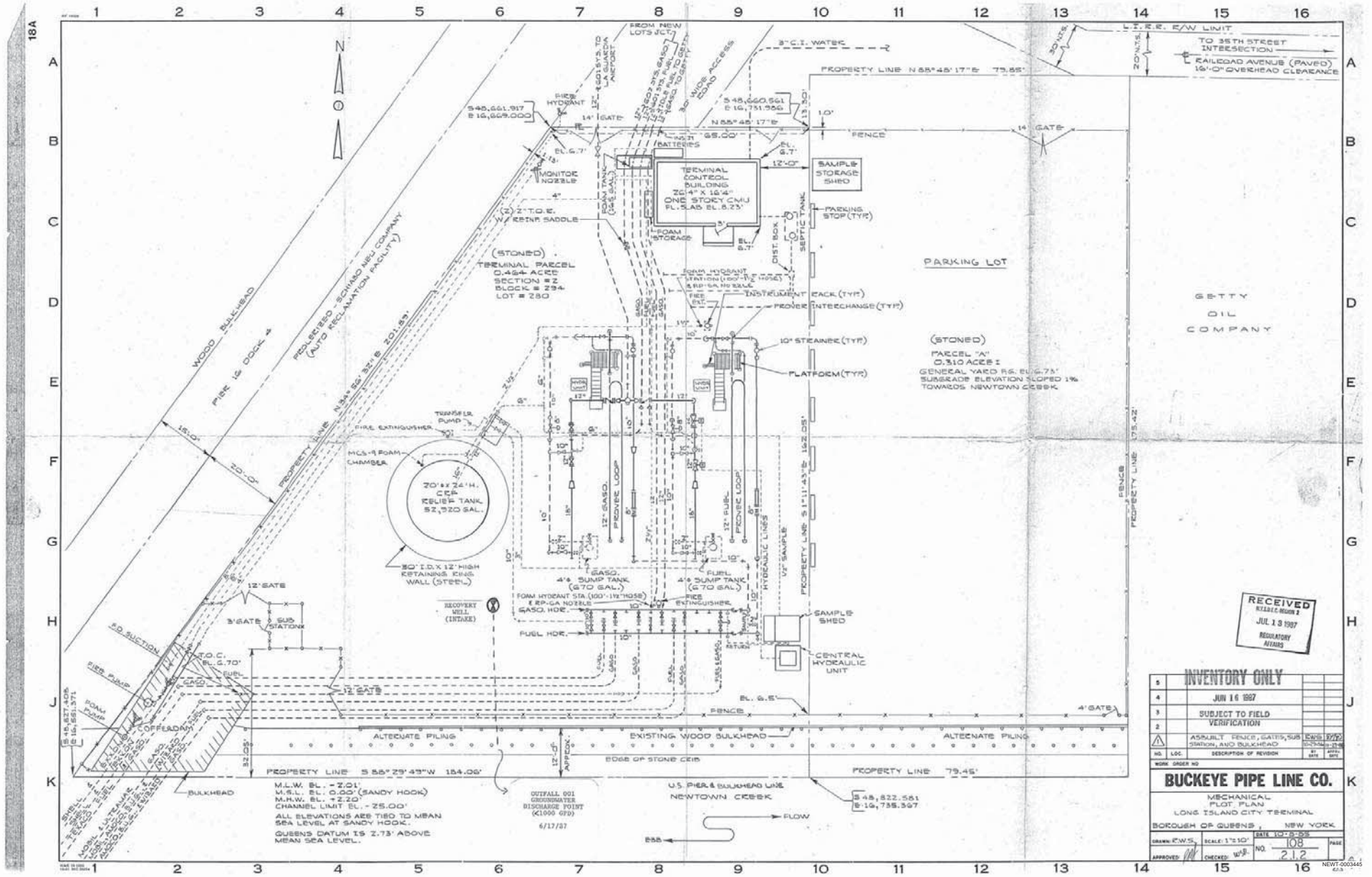
ANCHOR QEA

DRAFT

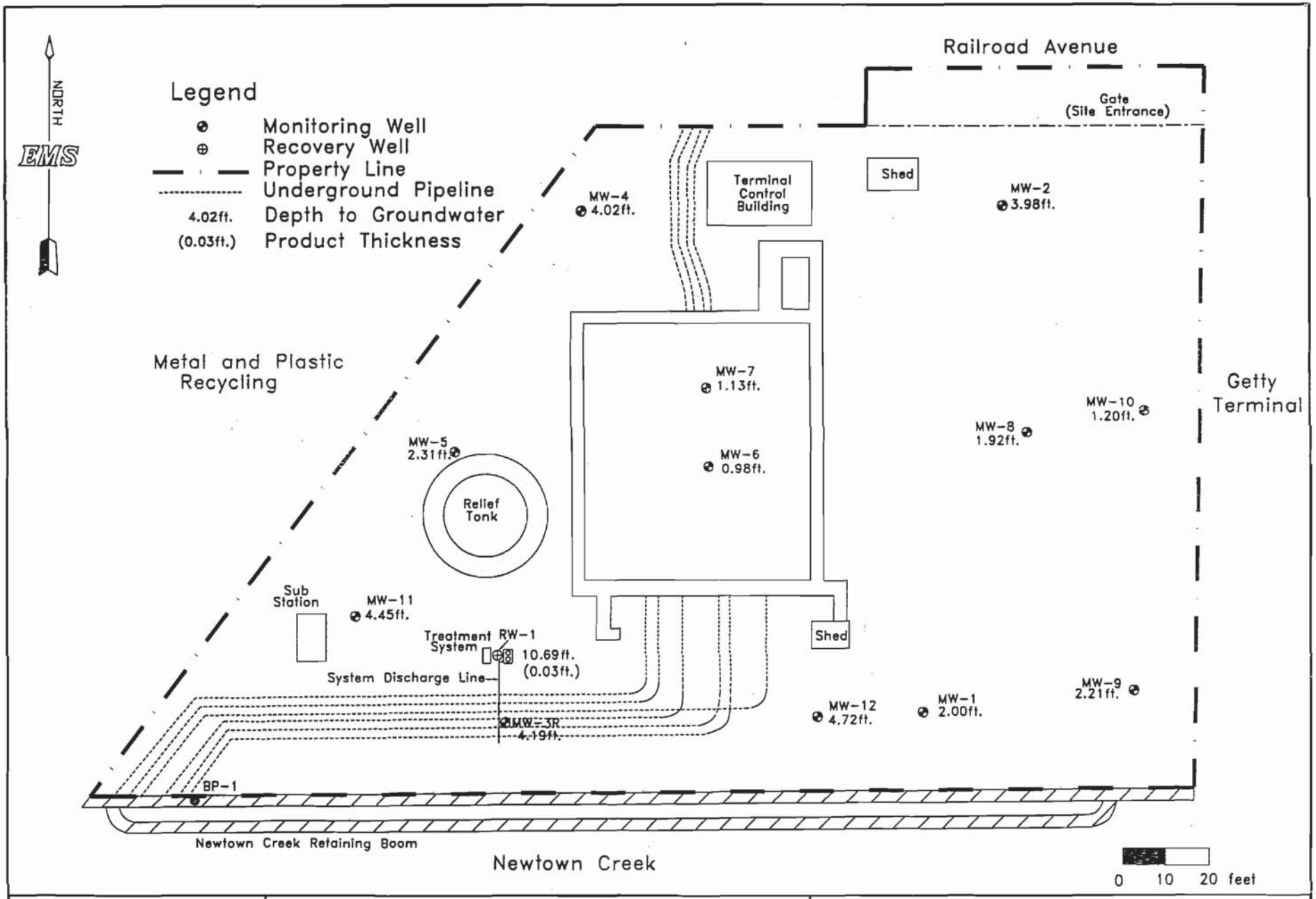
Figure 1
Site Vicinity Map
Draft Upland Site Summary: Buckeye Pipeline Facility
Newtown Creek RI/FS

SUPPLEMENTAL ATTACHMENTS

Attachment 1



Attachment 2

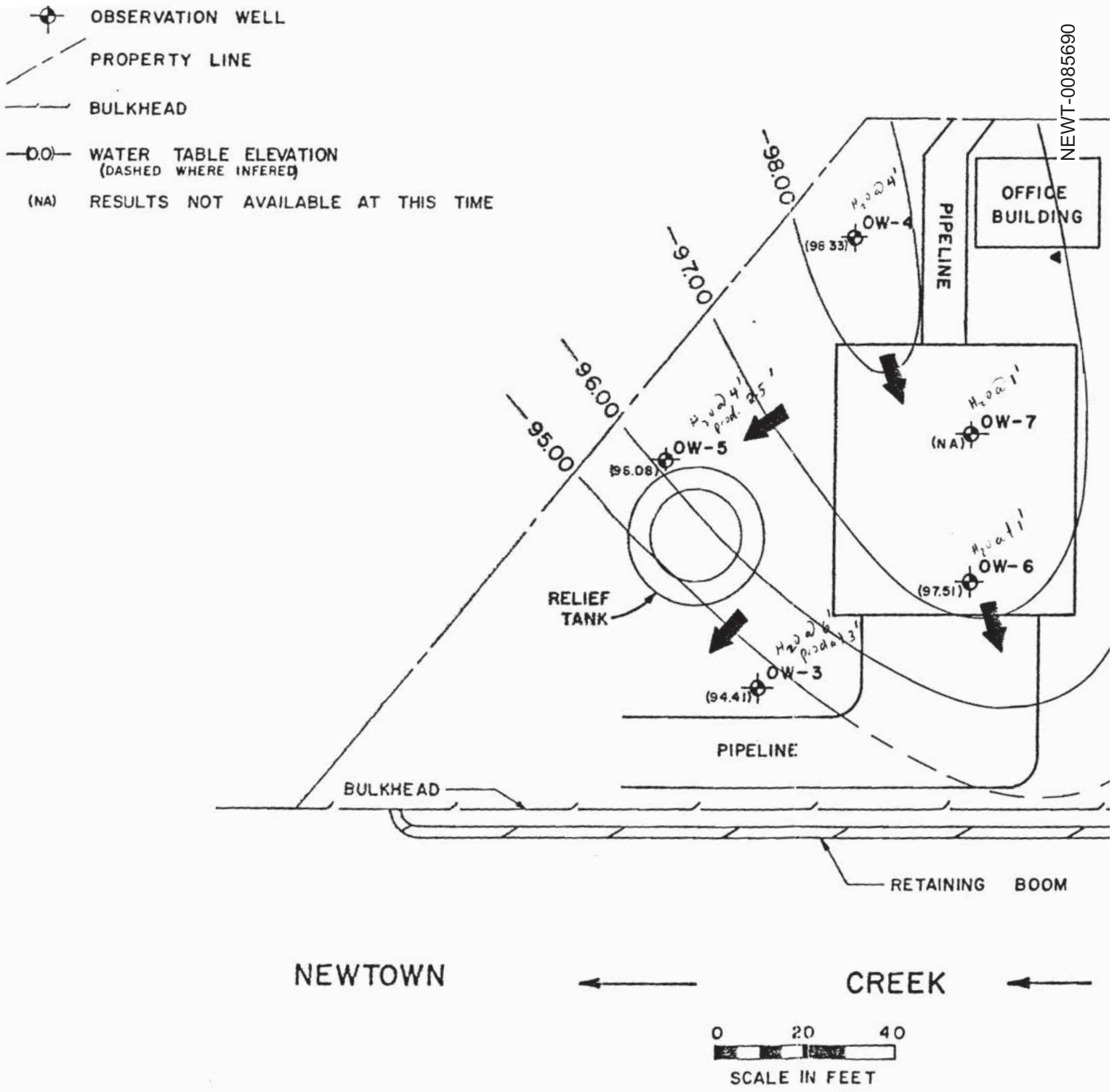


ENVIRONMENTAL, INC.	Site Plan		Buckeye Pipe Line Company, L.P. Railroad Avenue Long Island City, NY
	Drawn By: KNC	Date Sampled: 1/4/07	Scale: As Shown

Figure 1

NEWT-0004624

Attachment 3



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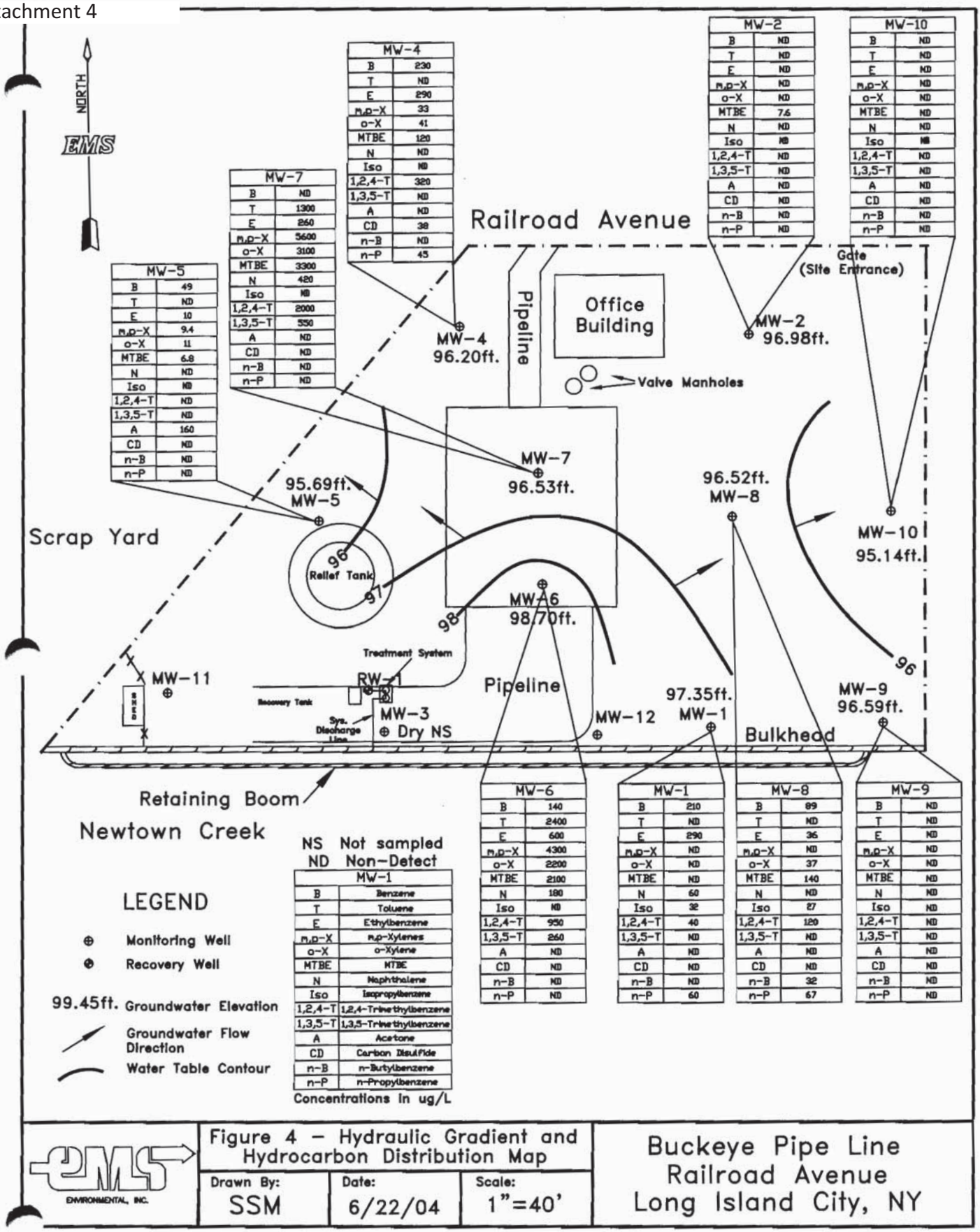


MW-4	
B	230
T	ND
E	290
m,p-X	33
o-X	41
MTBE	120
N	ND
Iso	ND
1,2,4-T	320
1,3,5-T	ND
A	ND
CD	38
n-B	ND
n-P	45

MW-2	
B	ND
T	ND
E	ND
m,p-X	ND
o-X	ND
MTBE	7.6
N	ND
Iso	ND
1,2,4-T	ND
1,3,5-T	ND
A	ND
CD	ND
n-B	ND
n-P	ND

MW-10	
B	ND
T	ND
E	ND
m,p-X	ND
o-X	ND
MTBE	ND
N	ND
Iso	ND
1,2,4-T	ND
1,3,5-T	ND
A	ND
CD	ND
n-B	ND
n-P	ND

MW-7	
B	ND
T	1300
E	260
m,p-X	5600
o-X	3100
MTBE	3300
N	420
Iso	ND
1,2,4-T	2000
1,3,5-T	550
A	ND
CD	ND
n-B	ND
n-P	ND

MW-5	
B	49
T	ND
E	10
m,p-X	9.4
o-X	11
MTBE	6.8
N	ND
Iso	ND
1,2,4-T	ND
1,3,5-T	ND
A	160
CD	ND
n-B	ND
n-P	ND

MW-6	
B	140
T	2400
E	600
m,p-X	4300
o-X	2200
MTBE	2100
N	180
Iso	ND
1,2,4-T	950
1,3,5-T	260
A	ND
CD	ND
n-B	ND
n-P	ND

MW-1	
B	210
T	ND
E	290
m,p-X	ND
o-X	ND
MTBE	ND
N	60
Iso	32
1,2,4-T	40
1,3,5-T	ND
A	ND
CD	ND
n-B	ND
n-P	60

MW-8	
B	89
T	ND
E	36
m,p-X	ND
o-X	37
MTBE	140
N	ND
Iso	27
1,2,4-T	120
1,3,5-T	ND
A	ND
CD	ND
n-B	32
n-P	67

MW-9	
B	ND
T	ND
E	ND
m,p-X	ND
o-X	ND
MTBE	ND
N	ND
Iso	ND
1,2,4-T	ND
1,3,5-T	ND
A	ND
CD	ND
n-B	ND
n-P	ND

MW-1	
B	Benzene
T	Toluene
E	Ethylbenzene
m,p-X	m,p-Xylenes
o-X	o-Xylene
MTBE	MTBE
N	Naphthalene
Iso	Isopropylbenzene
1,2,4-T	1,2,4-Trimethylbenzene
1,3,5-T	1,3,5-Trimethylbenzene
A	Acetone
CD	Carbon Disulfide
n-B	n-Butylbenzene
n-P	n-Propylbenzene

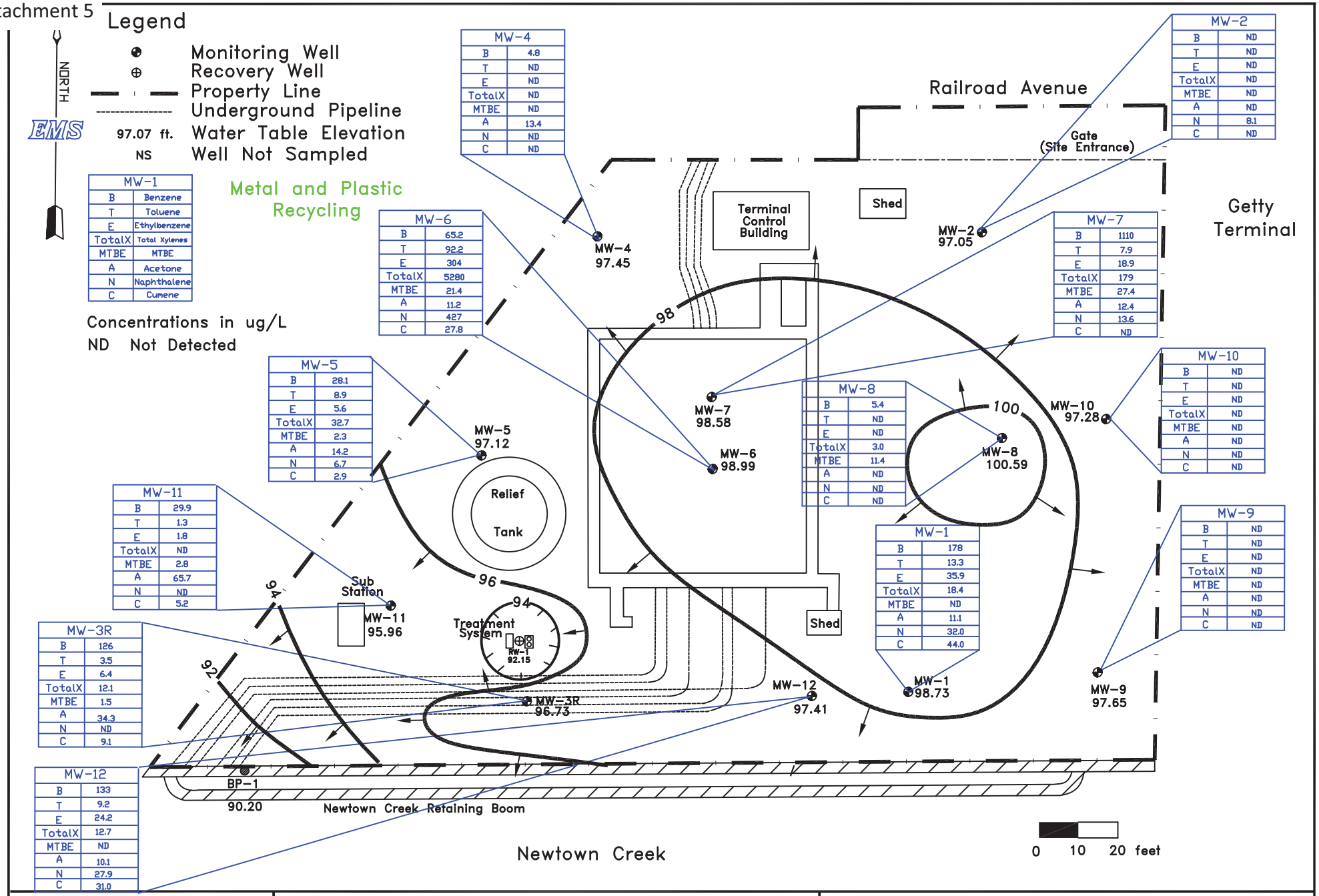
ENVIRONMENTAL, INC.

Figure 4 – Hydraulic Gradient and Hydrocarbon Distribution Map

Drawn By:	Date:	Scale:
SSM	6/22/04	1"=40'

Buckeye Pipe Line
Railroad Avenue
Long Island City, NY

Attachment 5

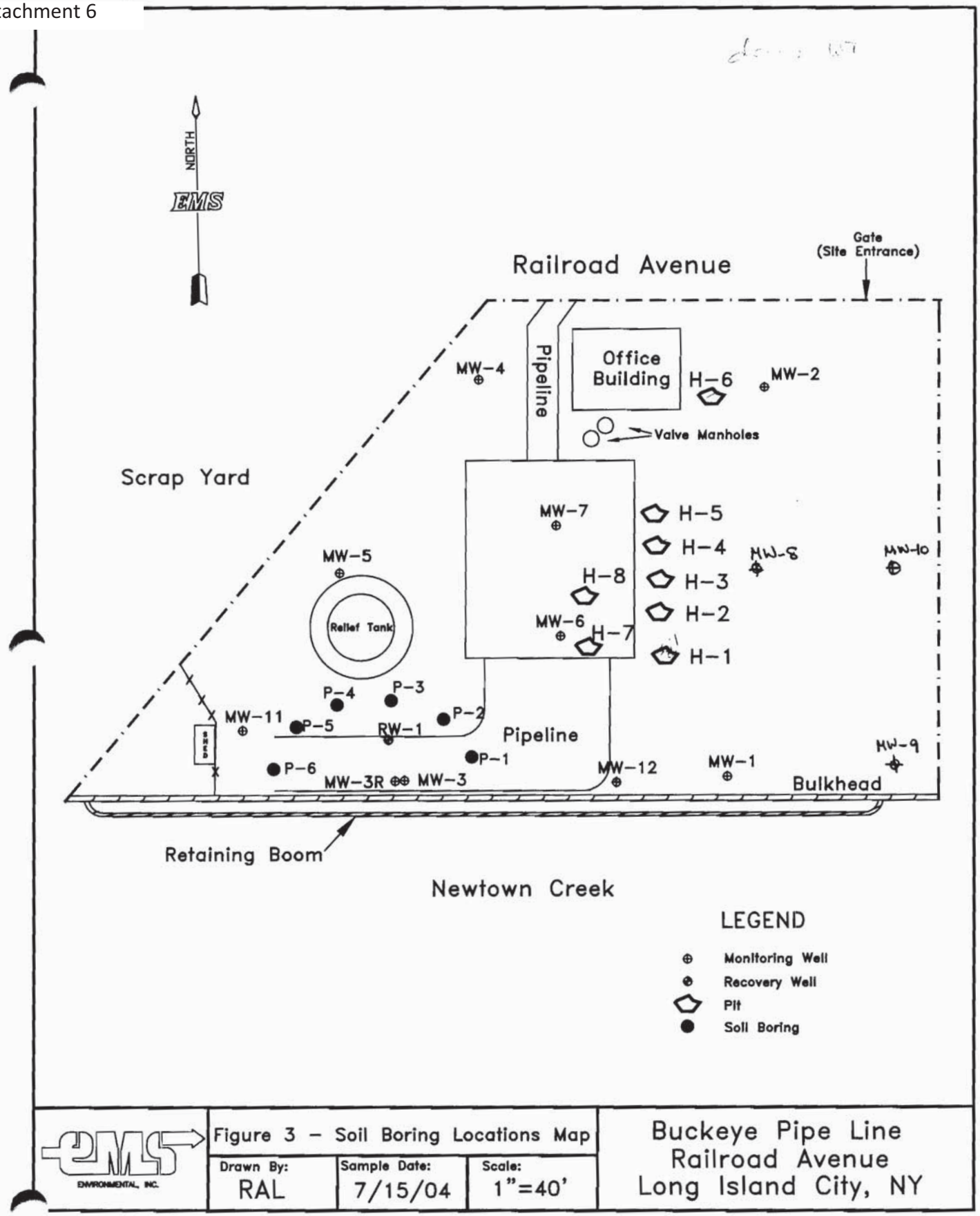


EMS ENVIRONMENTAL, INC.	Hydraulic Gradient and VOC Distribution Map	Buckeye Pipe Line Company, L.P. Railroad Avenue Long Island City, NY
	Drawn By: RAL Date Sampled: 6/25/09 Scale: As Shown	

Figure 3

NEWT-0088648

Attachment 6



EMS ENVIRONMENTAL, INC.	Figure 3 – Soil Boring Locations Map		Buckeye Pipe Line Railroad Avenue Long Island City, NY
	Drawn By: RAL	Sample Date: 7/15/04	Scale: 1"=40'

Attachment 7

NEWT-0086400

TABLE 2
Soil Characterization Analytical Results
Volatile Organic Compounds (VOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	Soil Cleanup Objectives* mg/kg	H-1 7/15/04 mg/kg	H-4 7/15/04 mg/kg	H-6 7/15/04 mg/kg	P-1 7/15/04 mg/kg	P-3 7/15/04 mg/kg	P-6 7/15/04 mg/kg	MW-11 7/15/04 mg/kg	MW-12 7/15/04 mg/kg
1,1,1,2-Tetrachloroethane	NA	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.76	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.6	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	NA	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.2	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.4	-	-	-	-	-	-	-	-
1,1-Dichloropropene	NA	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	NA	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	0.34	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	3.4	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	NA	1.3	-	-	1	-	1.1	0.35	25
1,2-Dibromo-3-chloropropane	NA	-	-	-	-	-	-	-	-
1,2-Dibromoethane	NA	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	7.9	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.1	-	-	-	-	-	-	-	-
1,2-Dichloropropane	NA	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	NA	1.1	-	-	-	-	-	-	8.5
1,3-Dichlorobenzene	1.55	-	-	-	-	-	-	-	-
1,3-Dichloropropane	0.3	-	-	-	-	-	-	-	-
1-4-Dichlorobenzene	8.5	-	-	-	-	-	-	-	-
2,2-Dichloropropane	NA	-	-	-	-	-	-	-	-
2-Butanone	0.3	-	-	-	-	-	-	-	-
2-Chloroethyl vinyl ether	NA	-	-	-	-	-	-	-	-
2-Chlorotoluene	NA	-	-	-	-	-	-	-	-
2-Hexanone	NA	-	-	-	-	-	-	-	-
4-Chlorotoluene	NA	-	-	-	-	-	-	-	-
4-Isopropyltoluene	NA	0.33	-	-	-	-	-	-	1.5
4-Methyl-2-pentanone	NA	-	-	-	-	-	-	-	-
Acetone	0.11	-	-	-	-	-	-	-	-
Acrolein	NA	-	-	-	-	-	-	-	-
Benzene	0.06	-	-	-	-	-	-	-	**2.6**
Bromobenzene	NA	-	-	-	-	-	-	-	-
Bromochloromethane	NA	-	-	-	-	-	-	-	-
Bromodichloromethane	NA	-	-	-	-	-	-	-	-
Bromoform	NA	-	-	-	-	-	-	-	-

ppm

Attachment 7

NEWT-0086401

TABLE 2
Soil Characterization Analytical Results
Volatile Organic Compounds (VOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	Soil Cleanup Objectives* mg/kg	H-1 7/15/04 mg/kg	H-4 7/15/04 mg/kg	H-6 7/15/04 mg/kg	P-1 7/15/04 mg/kg	P-3 7/15/04 mg/kg	P-6 7/15/04 mg/kg	MW-11 7/15/04 mg/kg	MW-12 7/15/04 mg/kg
Bromomethane	NA	-	-	-	-	-	-	-	-
Carbon Disulfide	2.7	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.6	-	-	-	-	-	-	-	-
Chlorobenzene	1.7	-	-	-	-	-	-	-	-
Chloroethane	1.9	-	-	-	-	-	-	-	-
Chloroform	0.3	-	-	-	-	-	-	-	-
Chloromethane	NA	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	NA	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	NA	-	-	-	-	-	-	-	-
Dibromochloromethane	NA	-	-	-	-	-	-	-	-
Dibromomethane	NA	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	NA	-	-	-	-	-	-	-	-
Diethyl Ether	NA	-	-	-	-	-	-	-	-
Ethyl benzene	5.5 ✓	-	-	-	0.79	-	0.44	-	**15**
Hexachlorobutadiene	NA	-	-	-	-	-	-	-	-
Iodomethane	NA	-	-	-	-	-	-	-	-
Isopropylbenzene	NA	-	-	-	0.83	-	-	-	5.1
m,p-Xylene	1.2	0.62	-	-	0.65	-	1	1	**21**
Methyl tert-butyl ether	~~0.12~~ NA	-	-	-	-	-	-	-	-
Methylene Chloride	0.1 +	-	-	-	-	-	-	-	-
n-Butylbenzene	NA	-	-	-	2	-	-	-	7.2
n-Propylbenzene	NA	-	-	-	2.8	-	-	-	14
o-Xylene	1.2	-	-	-	-	-	-	-	**2.7**
Naphthalene	NA	-	-	-	4.7	-	0.35	-	11
sec-Butylbenzene	NA	-	-	-	0.61	-	-	-	2.3
Styrene	NA	-	-	-	-	-	-	-	-
tert-Butylbenzene	NA	-	-	-	-	-	-	-	-
Tetrachloroethene	1.4	-	-	-	-	-	-	-	-
Tetrahydrofuran	NA	-	-	-	-	-	-	-	-
Toluene	1.5 ✓	-	-	-	-	-	-	0.6	0.78
trans-1,2-Dichloroethene	0.3	-	-	-	-	-	-	-	-

Attachment 7

TABLE 2
Soil Characterization Analytical Results
Volatile Organic Compounds (VOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	Soil Cleanup Objectives* mg/kg	H-1 7/15/04 mg/kg	H-4 7/15/04 mg/kg	H-6 7/15/04 mg/kg	P-1 7/15/04 mg/kg	P-3 7/15/04 mg/kg	P-6 7/15/04 mg/kg	MW-11 7/15/04 mg/kg	MW-12 7/15/04 mg/kg
trans-1,3-Dichloropropene	NA	-	-	-	-	-	-	-	-
Trichloroethene	0.7	-	-	-	-	-	-	-	-
Trichlorofluoromethane	NA	-	-	-	-	-	-	-	-
Vinyl acetate	NA	-	-	-	-	-	-	-	-
Vinyl chloride	0.12	-	-	-	-	-	-	-	-

Notes:
* Soil Cleanup Objectives from NYSDEC TAGM #4046
mg/kg = milligrams per kilogram
NA = Not Available
- = indicates that compound was not detected above the reporting limit.
Values in bold exceed the Soil Cleanup Objectives.

Attachment 8

NEWT-0086403

TABLE 3
Soil Characteriztion Anaylitical Results
Semivolatile Organic Compounds (SVOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	Soil Cleanup Objectives* mg/kg	H-1 7/15/04 mg/kg	H-4 7/15/04 mg/kg	H-6 7/15/04 mg/kg	P-1 7/15/04 mg/kg	P-3 7/15/04 mg/kg	P-6 7/15/04 mg/kg	MW-11 7/15/04 mg/kg	MW-12 7/15/04 mg/kg
1,2,4-Trichlorobenzene	NA	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	NA	-	-	-	-	-	-	-	-
1,2-Diphenylhydrazine	NA	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	NA	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	NA	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	0.1	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	NA	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	0.4	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	NA	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	0.2	**1.2**	**1.3**	-	-	**1.1**	-	-	-
2,4-Dinitrotoluene	NA	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	1	-	-	-	-	-	-	-	-
2-Chloronaphthalene	NA	-	-	-	-	-	-	-	-
2-Chlorophenol	0.8	-	-	-	-	-	-	-	-
2-Methylnaphthalene	36.4	0.87	-	-	7.7	-	0.83	-	11
2-Methylphenol	0.1	-	-	-	-	-	-	-	-
2-Nitroaniline	0.43	-	-	-	-	-	-	-	-
2-Nitrophenol	0.33	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	NA	-	-	-	-	-	-	-	-
3-Nitroaniline	0.5	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	NA	0.65	-	-	-	-	-	-	-
4-Bromophenyl phenyl ether	NA	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	0.24	-	-	-	-	-	-	-	-
4-Chloroaniline	0.22	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	NA	-	-	-	-	-	-	-	-
4-Methylphenol	0.9	-	-	-	-	-	-	-	-
4-Nitroaniline	NA	-	-	-	-	-	-	-	-
4-Nitrophenol	0.1	-	-	-	-	-	-	-	-
Acenaphthene	90	-	-	-	-	-	-	-	1.2
Acenaphthylene	41	-	-	-	-	-	-	-	-
Aniline	0.1	-	-	-	-	-	-	-	-
Anthracene	700	-	-	-	-	-	-	-	1.5
Benzo(a)anthracene	3	-	0.62	-	2.1	-	-	-	1.6
Benzidine	NA	-	-	-	-	-	-	-	-
Benzo(a)pyrene	11	-	0.69	-	-	-	-	-	1.3

Attachment 8

NEWT-0086404

TABLE 3
Soil Characteriztion Anaylitical Results
Semivolatile Organic Compounds (SVOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	Soil Cleanup Objectives* mg/kg	H-1 7/15/04 mg/kg	H-4 7/15/04 mg/kg	H-6 7/15/04 mg/kg	P-1 7/15/04 mg/kg	P-3 7/15/04 mg/kg	P-6 7/15/04 mg/kg	MW-11 7/15/04 mg/kg	MW-12 7/15/04 mg/kg
Benzo(b)fluoranthene	1.1	-	0.75	-	**2.1**	-	-	-	**1.5**
Benzo(g,h,i)perylene	800	-	-	-	-	-	-	-	-
Benzo(k)fluoroanthene	1.1	-	0.54	-	-	-	-	-	0.89
Benzoic acid	NA	-	-	-	-	-	-	-	-
Benzyl alcohol	NA	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	NA	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	NA	-	-	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	NA	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl)phthalate	435	-	1	-	-	4	1.3	0.99	2.3
Butyl benzyl phthalate	122	-	0.39	-	-	0.46	-	-	-
Chrysene	0.4	-	**0.66**	-	**2.2**	-	-	-	**1.5**
Di-n-butyl phthalate	8.1	-	-	-	-	-	-	-	-
Di-n-octyl phthalate	120	-	-	-	-	0.72	-	-	-
Dibenz(a,h)anthracene	165,000	-	-	-	-	-	-	-	-
Dibenzofuran	6.2	-	-	-	-	-	-	-	1.1
Diethyl phthalate	7.1	-	-	-	-	-	-	-	-
Dimethyl phthalate	2	-	-	-	-	-	-	-	-
Fluoranthene	1900	0.72	1.3	-	3.9	-	-	-	4.6
Fluorene	350	0.42	-	-	-	-	-	-	1.6
Hexachlorobenzene	1.4	-	-	-	-	-	-	-	-
Hexachlorobutadiene	NA	-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	NA	-	-	-	-	-	-	-	-
Hexachloroethane	NA	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	3.2	-	-	-	-	-	-	-	-
Isophorone	4.4	-	-	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	NA	-	-	-	-	-	-	-	-

Attachment 8

NEWT-0086405

TABLE 3
Soil Characteriztion Anaylitical Results
Semivolatile Organic Compounds (SVOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	Soil Cleanup Objectives* mg/kg	H-1 7/15/04 mg/kg	H-4 7/15/04 mg/kg	H-6 7/15/04 mg/kg	P-1 7/15/04 mg/kg	P-3 7/15/04 mg/kg	P-6 7/15/04 mg/kg	MW-11 7/15/04 mg/kg	MW-12 7/15/04 mg/kg
N-Nitrosodiphenylamine	NA	-	-	-	-	-	-	-	-
Naphthalene	13	-	-	-	2	-	-	-	5.1
Nitrobenzene	0.2	-	-	-	-	-	-	-	
Pentachlorophenol	1	-	-	-	-	-	-	-	
Phenanthrene	220	0.85	0.67	-	4.6	-	-	-	7.6
Phenol	0.03	-	-	-	-	-	-	-	-
Pyrene	665	0.58	1.1	-	3.7	-	-	-	3

Notes:
* Soil Cleanup Objectives from NYSDEC TAGM #4046
mg/kg = milligrams per kilogram
NA = Not Available
- = indicates that compound was not detected above the reporting limit.
Values in bold exceed the Soil Cleanup Objectives.

Attachment 9

NEWT-0002857

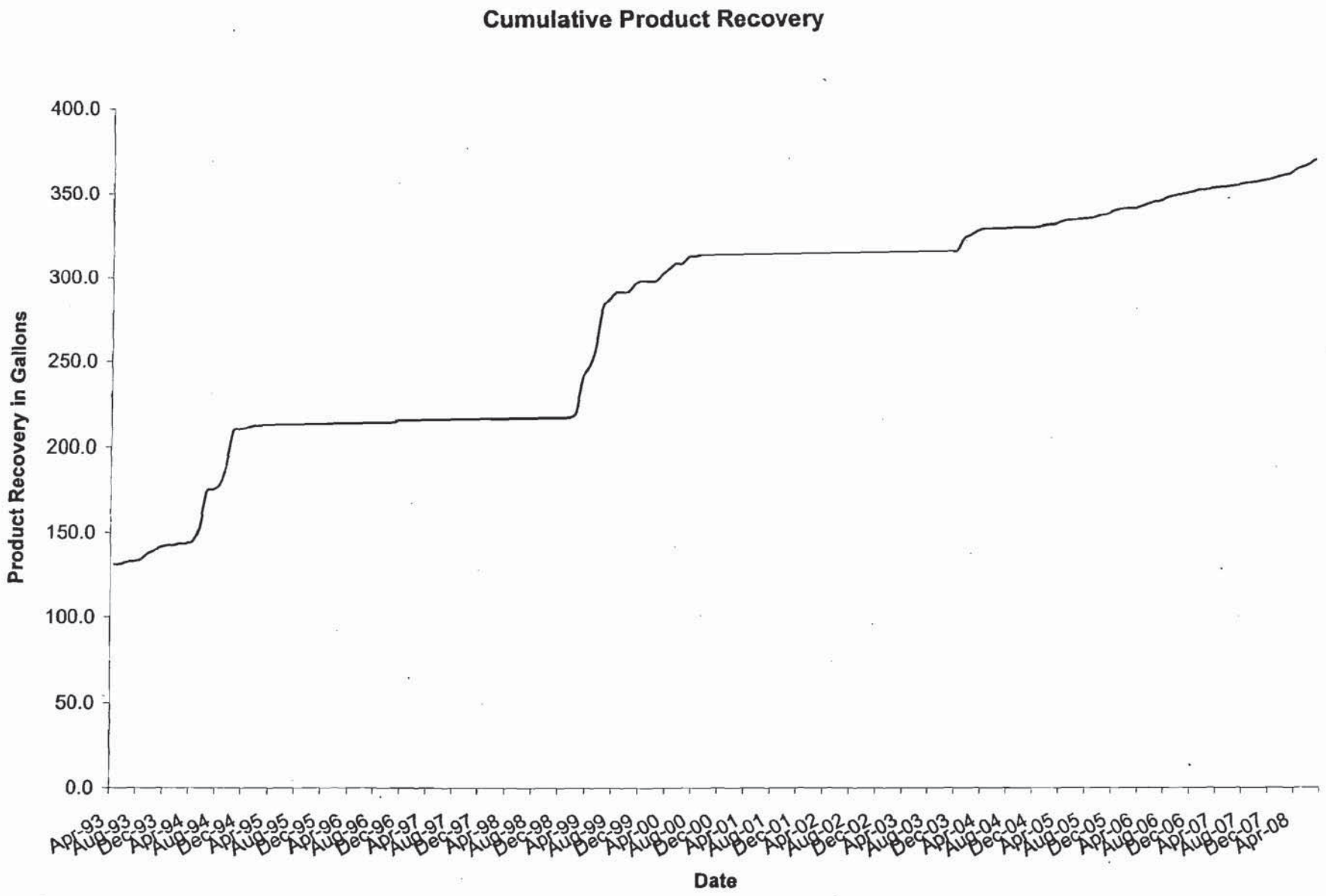


TABLE 15
Groundwater Characterization Analytical Results
Volatile Organic Compounds (VOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	NYSDEC Ambient Water Quality	MW-1	MW-2	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
		6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	5	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	5	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	0.04	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	5	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	5	**40**	-	**320**	-	**950**	**2000**	**120**	-	-
1,2-Dibromo-3-chloropropane	0.04	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	0.0006	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	3	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.6	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	5	-	-	-	-	**260**	**550**	-	-	-
1,3-Dichlorobenzene	3	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	5	-	-	-	-	-	-	-	-	-
1-4-Dichlorobenzene	3	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	5	-	-	-	-	-	-	-	-	-
2-Butanone	50	-	-	-	-	-	-	-	-	-
2-Chloroethyl vinyl ether	NA	-	-	-	-	-	-	-	-	-
2-Chlorotoluene	5	-	-	-	-	-	-	-	-	-
2-Hexanone	50	-	-	-	-	-	-	-	-	-
4-Chlorotoluene	5	-	-	-	-	-	-	-	-	-
4-Isopropyltoluene	5	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	NA	-	-	-	-	-	-	-	-	-
Acetone	50	-	-	-	**160**	-	-	-	-	-

Attachment 10

NEWT-0086430

TABLE 15
Groundwater Characterization Analytical Results
Volatile Organic Compounds (VOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	NYSDEC Ambient Water Quality	MW-1	MW-2	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
		6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Acrolein	5	-	-	-	-	-	-	-	-	-
Benzene	1	**210**	-	**230**	**49**	**140**	-	**89**	-	-
Bromobenzene	5	-	-	-	-	-	-	-	-	-
Bromochloromethane	5	-	-	-	-	-	-	-	-	-
Bromodichloromethane	50	-	-	-	-	-	-	-	-	-
Bromoform	50	-	-	-	-	-	-	-	-	-
Bromoethane	5	-	-	-	-	-	-	-	-	-
Carbon Disulfide	60	-	-	38	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-
Chloroethane	5	-	-	-	-	-	-	-	-	-
Chloroform	7	-	-	-	-	-	-	-	-	-
Chloromethane	5	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	5	-	-	-	-	-	-	-	-	-
Dibromochloromethane	50	-	-	-	-	-	-	-	-	-
Dibromomethane	5	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	5	-	-	-	-	-	-	-	-	-
Diethyl Ether	NA	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	**290**	-	**290**	**10**	**600**	**260**	**36**	-	-
Hexachlorobutadiene	0.5	-	-	-	-	-	-	-	-	-
Iodomethane	5	-	-	-	-	-	-	-	-	-
Isopropylbenzene	5	**32**	-	-	-	-	-	**27**	-	-
m,p-Xylene	5	-	-	**33**	**9.4**	**4300**	**5600**	-	-	-
Methyl tert-butyl ether	10	-	7.6	**120**	**6.8**	**2100**	**3300**	**140**	-	-
Methylene Chloride	5	-	-	-	-	-	-	-	-	-
n-Butylbenzene	5	-	-	-	-	-	-	**32**	-	-
n-Propylbenzene	5	**60**	-	45	-	-	-	**67**	-	-
Naphthalene	10	**60**	-	-	-	**180**	**420**	-	-	-
o-Xylene	5	-	-	**41**	**11**	**2200**	**3100**	**37**	-	-
Total BTEX		532	ND	594	80	9640	10260	162	ND	ND

Attachment 10

NEWT-0086431

TABLE 15
Groundwater Characterization Analytical Results
Volatile Organic Compounds (VOCs)
Buckeye Pipe Line, Long Island City, NY

Compound	NYSDEC Ambient Water Quality	MW-1	MW-2	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
		6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04	6/10/04
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
sec-Butylbenzene	5	-	-	-	-	-	-	-	-	-
Styrene	5	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	5	-	-	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	50	-	-	-	-	-	-	-	-	-
Toluene	5	-	-	-	-	**2400**	**1300**	-	-	-
trans-1,2-Dichloroethene	5	-	-	-	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	5	-	-	-	-	-	-	-	-	-
Vinyl acetate	NA	-	-	-	-	-	-	-	-	-
Vinyl chloride	2/0.3**	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	0.4***	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene		-	-	-	-	-	-	-	-	-

Notes:
* From New York State Department of Environmental Conservation (NYSDEC) TOGS No. 1.1.1 Tables 1,3,5.
Bolded values indicate exceedences of NYSDEC Groundwater Standards or Guidance Values.
NA = No Applicable NYSDEC Groundwater Standard or Guidance Value.
- = indicates that compound was not detected above the method detection limit (MDL).
µg/L = micrograms per liter
** = Values listed are the NYSDEC Groundwater Standard and Guidance Value.
*** = The Guidance Value for the sum of cis-1,3-Dichloropropene and trans-1,3-Dichloropropene is 0.4 µg/L.

Table 3
Summary of Historical Detections
Monitoring Data Results
Buckeye Pipe Line Company, L.P.
Railroad Avenue, Long Island City, NY

Well No.	Date	Casing Elevation* (ft.)	Depth to Water (ft.)	Water Table Elevation* (ft.)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	Cumene (µg/L)	Acetone (µg/L)
MW-1	6/10/2004	100.55	3.2	97.35	**210**	-	**290**	-	-	**60**	**32**	-
	9/30/2004	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	12/30/2004	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	3/10/2005	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	6/13/2005	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	9/27/2005	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	12/30/2005	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	3/27/2006	100.55	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	6/29/2006	100.55	0.00	100.55	**64**	**13**	**280**	**210**	-	**4700**	**890**	-
	9/15/2006	100.55	0.00	100.55	NS	NS	NS	NS	NS	NS	NS	NS
	12/6/2006	100.55	3.20	97.35	**9.9**	-	**11**	-	-	7.1	3.8	-
	3/22/2007	100.55	1.57	98.98	**1.7**	-	**-**	-	-	-	-	-
	6/12/2007	100.55	2.37	98.18	**57**	**5.7**	**40**	**18**	-	**58**	**25**	**91**
	9/5/2007	100.55	3.39	97.16	**82**	**8.9**	**71**	**22**	-	**57**	**35**	-
	12/10/2007	100.55	0.78	99.77	**3.8**	-	-	-	-	-	-	-
	3/25/2008	100.55	1.36	99.19	**25**	-	4.5	**8.4**	-	-	-	-
	6/23/2008	100.55	2.91	97.64	**313**	**19.3**	**107**	**35.2**	-	**96.1**	**63.6**	-
	9/23/2008	100.55	3.05	97.50	**302**	**19.0**	**84.1**	**28.4**	-	**46.5**	**59.6**	**59.9**
	12/15/2008	100.55	0.38	100.17	**4.3**	-	-	-	-	1.5	-	-
	3/16/2009	100.55	3.58	96.97	**125**	**9.6**	**33.8**	**17.1**	-	**31.0**	**24.8**	-
	6/25/2009	100.55	1.82	98.73	**178**	**13.3**	**35.9**	**18.4**	-	**32.0**	**44.0**	11.1
MW-2	6/10/2004	100.28	3.30	96.98	-	-	-	-	8	-	-	-
	9/30/2004	100.28	2.33	97.95	-	-	-	-	-	-	-	-
	12/30/2004	100.28	4.14	96.14	-	-	-	-	-	-	-	-
	3/10/2005	100.28	4.14	96.14	-	-	-	-	-	-	-	-
	6/13/2005	100.28	4.22	96.06	-	-	-	-	-	-	-	-
	9/27/2005	100.28	4.61	95.67	-	-	-	-	-	-	-	-
	12/30/2005	100.28	4.13	96.15	-	-	-	-	-	-	-	-
	3/27/2006	100.28	4.33	95.95	-	-	-	-	-	-	-	-
	6/29/2006	100.28	3.13	97.15	-	-	-	-	-	-	-	-
	9/15/2006	100.28	3.51	96.77	-	-	-	-	-	-	-	-
	12/6/2006	100.28	3.89	96.39	-	-	-	-	-	-	-	-
	3/22/2007	100.28	3.79	96.49	-	-	-	-	-	-	-	-
	6/12/2007	100.28	3.74	96.54	-	-	-	-	-	-	-	-
	9/5/2007	100.28	4.07	96.21	-	-	-	-	-	-	-	-
	12/10/2007	100.28	4.47	95.81	-	-	-	-	-	-	-	-
	3/25/2008	100.28	3.87	96.41	-	-	-	-	-	-	-	-
	6/23/2008	100.28	4.03	96.25	-	-	-	-	-	1.2	-	-
	9/23/2008	100.28	4.23	96.05	-	-	-	-	-	-	-	-
	12/15/2008	100.28	3.48	96.80	-	-	-	-	-	-	-	-
	3/16/2009	100.28	4.71	95.57	-	-	-	-	-	8.1	-	**5,070**
	6/25/2009	100.28	3.23	97.05	-	-	-	-	-	-	-	-
MW-3	6/10/2004	99.82	dry		NS	NS	NS	NS	NS	NS	NS	NS
MW-3R	9/30/2004	99.73	3.13	96.60	**580**	-	**29**	**43**	**140**	**39**	**26**	-
	12/30/2004	99.73	4.06	95.67	**75**	-	**17**	**21**	**75**	**76**	**15**	-
	3/10/2005	99.73	3.85	95.88	**74.8**	-	**-**	**-**	**155**	**73.6**	-	**-**
	6/13/2005	99.73	3.89	95.84	**586**	**10.7**	**45.3**	**33.3**	**161**	**112**	**35.6**	**68.1**
	9/27/2005	99.73	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	12/30/2005	99.73	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	3/27/2006	99.73	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	6/29/2006	99.73	3.15	96.58	**99**	**10**	**33**	**85**	8.8	**66**	2.4	-
	9/15/2006	99.73	2.92	96.81	**180**	**6.6**	**5.1**	**42**	5.1	**24**	-	**92**
	12/6/2006	99.73	3.73	96.00	**210**	**4.8**	**10**	**17**	**12**	**12**	**24**	**-**
	3/22/2007	99.73	4.08	95.65	**58**	**-**	**-**	**9.1**	**13**	**-**	**-**	**-**
	6/12/2007	99.73	3.79	95.94	**360**	**6.7**	**14**	**25**	**-**	**20**	**24**	**-**
	9/5/2007	99.73	3.84	95.89	**370**	**13**	**20**	**41**	**58**	**18**	**23**	**51**
	12/10/2007	99.73	4.20	95.53	**260**	**5.8**	**11**	**18**	**24**	5.6	**36**	-
	3/25/2008	99.73	3.98	95.75	**49**	**-**	3.8	**-**	**-**	**-**	**12**	-
	6/23/2008	99.73	3.25	96.48	**10.3**	**-**	2.2	**-**	**-**	2.6	**5.5**	34.5
	9/23/2008	99.73	3.76	95.97	**124**	4.3	**9.1**	**19.8**	**-**	6.0	**13.4**	**96.2**
	12/15/2008	99.73	3.52	96.21	**32.5**	**-**	1.4	**-**	**-**	**-**	**6.6**	41.2
	3/16/2009	99.73	4.42	95.31	**187**	2.3	4.7	**7.3**	7.7	**10.1**	**21.9**	**50.9**
	6/25/2009	99.73	3.00	96.73	**126**	3.5	**6.4**	**12.1**	1.5	-	**9.1**	34.3
MW-4	6/10/2004	100.34	4.14	96.2	**230**	-	**290**	**33**	**120**	-	-	-
	9/30/2004	100.34	1.89	98.45	**130**	**160**	**9**	**63**	**490**	-	-	-
	12/30/2004	100.34	4.07	96.27	**76**	-	-	**12**	**46**	**16**	-	-
	3/10/2005	100.34	4.17	96.17	**183**	**31.2**	**537**	**64.2**	**73.2**	**-**	-	-
	6/13/2005	100.34	4.2	96.14	**69.7**	**-**	**102**	**-**	**20.4**	**-**	**10.8**	-
	9/27/2005	100.34	4.4	95.94	**102**	**55.1**	**573**	**1,040**	**-**	**162**	-	-
	12/30/2005	100.34	4.05	96.29	**1.74**	**-**	**-**	**-**	**-**	**-**	-	-
	3/27/2006	100.34	4.05	96.29	**13**	-	-	-	**14**	-	-	-
	6/29/2006	100.34	3.89	96.45	**36**	**7**	**39**	**54**	**13**	**19**	**6.5**	-
	9/15/2006	100.34	3.61	96.73	**130**	**51**	**500**	**910**	**46**	**190**	**58**	-
	12/6/2006	100.34	3.75	96.59	**38**	**6.4**	**110**	**38**	9.6	8.0	**17**	-
	3/22/2007	100.34	3.94	96.40	**35**	**13**	**85**	**110**	**16**	**13**	**7.0**	-
	6/12/2007	100.34	3.83	96.51	**71**	**28**	**390**	**450**	**-**	**95**	**40**	-
	9/5/2007	100.34	4.10	96.24	**33**	**11**	**67**	**67**	**15**	**44**	**19**	-
	12/10/2007	100.34	4.42	95.92	**14**	-	-	-	6.3	-	2.6	-
	3/25/2008	100.34	3.82	96.52	**13**	-	**18**	**8.6**	8.0	-	-	-
	6/23/2008	100.34	3.88	96.46	**64.3**	**20.0**	**224**	**107**	-	**108**	**38.1**	**76.0**
	9/23/2008	100.34	4.11	96.23	**78.3**	**30.1**	**192**	**184**	-	**148**	**45.5**	**67.5**
	12/15/2008	100.34	3.27	97.07	**11.6**	1.6	2.8	3.4	-	-	-	-
	3/16/2009	100.34	4.71	95.63	**4.9**	-	-	-	2.8	-	-	**104**
	6/25/2009	100.34	2.89	97.45	**4.8**	-	-	-	-	-	-	13.4
NYSDEC Standard/Guidance Value**					**1**	**5**	**5**	**5**	**10**	**10**	**5**	**50**

Attachment 11

Table 3
Summary of Historical Detections
Monitoring Data Results
Buckeye Pipe Line Company, L.P.
Railroad Avenue, Long Island City, NY

Well No.	Date	Casing Elevation* (ft.)	Depth to Water (ft.)	Water Table Elevation* (ft.)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	Cumene (µg/L)	Acetone (µg/L)
MW-5	6/10/2004	99.34	3.65	95.69	**49**	-	**10**	**9**	7	-	-	**160**
	9/30/2004	99.34	0.99	98.35	-	-	-	-	-	-	-	-
	12/30/2004	99.34	3.48	95.86	-	-	-	-	-	-	-	-
	3/10/2005	99.34	3.62	95.72	-	-	-	-	-	-	-	**92.8**
	6/13/2005	99.34	3.24	96.1	**18.2**	-	-	-	-	-	-	-
	9/27/2005	99.34	3.73	95.61	-	-	-	-	-	-	-	-
	12/30/2005	99.34	3.25	96.09	-	-	-	-	-	-	-	-
	3/27/2006	99.34	3.80	95.54	-	-	-	-	2.4	-	-	-
	6/29/2006	99.34	3.63	95.71	**1.5**	-	-	-	-	5.0	-	-
	9/15/2006	99.34	3.01	96.33	**24**	5.0	**5.4**	**8.8**	8.7	-	-	-
	12/6/2006	99.34	3.15	96.19	**54**	**7.9**	**6.6**	**17**	**16**	6.0	2.8	-
	3/22/2007	99.34	3.51	95.83	**77**	**23**	2.8	**28**	9.9	-	-	-
	6/12/2007	99.34	2.91	96.43	**10**	2.5	-	-	-	-	-	-
	9/5/2007	99.34	3.46	95.88	**67**	**7.7**	4.9	**14**	6.5	-	-	-
	12/10/2007	99.34	3.66	95.68	**120**	**33.0**	**9.5**	**47**	**12**	**15**	3.1	-
	3/25/2008	99.34	3.39	95.95	**110**	**40**	**44**	**52**	-	**29**	**8.7**	-
	6/23/2008	99.34	2.97	96.37	**57.2**	**16.7**	**11.0**	**26.6**	-	**13**	4.3	**58.3**
	9/23/2008	99.34	3.28	96.06	**45.5**	**16.7**	**31.4**	**87.5**	-	**19.8**	4.3	41.8
	12/15/2008	99.34	2.61	96.73	**24.5**	4.8	1.0	**9.9**	-	4.8	-	21.3
	3/16/2009	99.34	4.11	95.23	**50.6**	**9.3**	**8.5**	**12.0**	7.9	8.6	3.7	-
	6/25/2009	100.34	2.22	98.12	**28.1**	**8.9**	**5.6**	**32.7**	2.3	6.7	2.9	14.2
MW-6	6/10/2004	100.24	1.54	98.70	**140**	**2,400**	**600**	**4,300**	**2,100**	**180**	**4,300**	-
	9/30/2004	100.24	0.78	99.46	-	**35**	-	**1,500**	**41**	**92**	-	-
	12/30/2004	100.24	2.66	97.58	**46**	-	-	**1,600**	**72**	**75**	-	-
	3/10/2005	100.24	2.18	98.06	**11.6**	-	-	**1,940**	**-**	**133**	-	-
	6/13/2005	100.24	2.42	97.82	**7.96**	-	-	**107**	**10.7**	**15.4**	-	-
	9/27/2005	100.24	3.10	97.14	**87.1**	-	-	**119**	**158**	**73.1**	-	-
	12/30/2005	100.24	2.33	97.91	**-**	-	-	-	-	-	-	-
	3/27/2006	100.24	2.11	98.13	**540**	**2,600**	**780**	**5,700**	**65**	-	-	-
	6/29/2006	100.24	1.65	98.59	**5.6**	**15**	**6.1**	**73**	9.5	**22**	-	-
	9/15/2006	100.24	1.08	99.16	**32**	**32**	**33**	**330**	10	**93**	**9.3**	-
	12/6/2006	100.24	1.74	98.50	**6**	4	**10**	**85**	-	**18**	**2.2**	-
	3/22/2007	100.24	1.36	98.88	**-**	**-**	**-**	**6.3**	-	**14**	-	-
	6/12/2007	100.24	1.67	98.57	**12**	2.7	**11**	**13**	-	-	-	-
	9/5/2007	100.24	2.45	97.79	**34**	**5.5**	**26**	**12**	7.1	**14**	2.0	-
	12/10/2007	100.24	1.24	99.00	**24**	4.0	**15**	**30**	-	**15**	-	-
	3/25/2008	100.24	1.69	98.55	-	-	-	-	-	-	-	-
	6/23/2008	100.24	1.67	98.57	**6.5**	2.2	**11.1**	3.5	8.9	2.6	-	-
	9/23/2008	100.24	2.13	98.11	**4.3**	1.7	4.1	-	-	1.1	-	-
	12/15/2008	100.24	1.13	99.11	-	-	-	-	-	-	-	-
	3/16/2009	100.24	2.41	97.83	**3.8**	1.0	**14.5**	-	-	9.5	1.1	**202**
	6/25/2009	100.24	1.25	98.99	**65.2**	**92.2**	**304**	**5,280**	**21.4**	**427**	**27.8**	11.2
MW-7	6/10/2004	100.03	3.5	96.53	**89**	**1,300**	**260**	**5,600**	**3,300**	**420**	-	-
	9/30/2004	100.03	1.17	98.86	-	**700**	-	**2,200**	**3,700**	**190**	-	-
	12/30/2004	100.03	3.17	96.86	**85**	**680**	**60**	**4,800**	**210**	**350**	-	-
	3/10/2005	100.03	3.1	96.93	**-**	**-**	**-**	**3,820**	**-**	**-**	-	-
	6/13/2005	100.03	3.3	96.73	**-**	**241**	**204**	**4,720**	**143**	**359**	-	-
	9/27/2005	100.03	3.92	96.11	**257**	**678**	**-**	**4,180**	**-**	**383**	-	-
	12/30/2005	100.03	3.02	97.01	**27.8**	**347**	**332**	**6,420**	**-**	**383**	-	**168**
	3/27/2006	100.03	2.20	97.83	**54.0**	**340**	**480**	**8,200**	**49**	-	-	-
	6/29/2006	100.03	1.10	98.93	**130**	**220**	**220**	**6,400**	**16**	**210**	**20**	-
	9/15/2006	100.03	1.70	98.33	**160**	**390**	**370**	**7,600**	**34**	**470**	**36**	-
	12/6/2006	100.03	2.95	97.08	**180**	**370**	**390**	**11,000**	**81**	**370**	**47**	**340**
	3/22/2007	100.03	2.02	98.01	**28**	**190**	**35**	**7,100**	**-**	**170**	**5.9**	**210**
	6/12/2007	100.03	2.33	97.70	**94**	**160**	**150**	**1,300**	**-**	**250**	**-**	**-**
	9/5/2007	100.03	3.14	96.89	**98**	**240**	**260**	**5,600**	**370**	**380**	**16**	**-**
	12/10/2007	100.03	3.15	96.88	**100**	**240**	**190**	**5,100**	**45**	**400**	**20**	**-**
	3/25/2008	100.03	1.97	98.06	**11**	**90**	**270**	**6,200**	3.3	**380**	**24**	**62**
	6/23/2008	100.03	2.43	97.60	**40.5**	**67.5**	**232**	**4,260**	-	**369**	**25.1**	-
	9/23/2008	100.03	2.92	97.11	**76.0**	**126.0**	**232**	**4,310**	**52.2**	**517**	**28.0**	-
	12/15/2008	100.03	1.54	98.49	**76.6**	**91.2**	**336**	**5,370**	-	**402**	**37.0**	-
	3/16/2009	100.03	3.89	96.14	**26.9**	**73.3**	**121**	**4,350**	**31.0**	**446**	**17.8**	15.2
	6/25/2009	100.03	1.45	98.58	**1,110**	**7.9**	**18.9**	**179**	**27.4**	**13.6**	-	12.4
MW-8	6/10/2004	100.60	4.08	96.52	**89**	-	**36**	-	**140**	-	**27**	-
	9/30/2004	100.60	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	12/30/2004	100.60	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	3/10/2005	100.60	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	6/13/2005	100.60	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	9/27/2005	100.60	0.02	100.58	-	-	-	-	-	-	-	-
	12/30/2005	100.60	0	100.60	-	-	-	4.68	-	-	-	-
	3/27/2006	100.60	3.55	97.05	-	-	-	-	-	-	-	-
	6/29/2006	100.60	0.00	100.60	-	-	-	-	-	-	-	-
	9/15/2006	100.60	0.00	100.60	NS	NS	NS	NS	NS	NS	NS	NS
	12/6/2006	100.60	3.29	97.31	**2.1**	-	4.2	**19**	7.2	**14**	**6**	**3000**
	3/22/2007	100.60	1.67	98.93	**1.5**	-	-	-	-	-	-	-
	6/12/2007	100.60	0.41	100.19	**9**	-	-	-	-	-	-	-
	12/10/2007	100.60	0.11	100.49	**1.5**	**15**	3.1	**17**	-	-	-	-
	3/25/2008	100.60	1.78	98.82	**34**	-	**6.1**	**12**	-	-	-	-
	6/23/2008	100.60	3.29	97.31	**38.7**	-	2.6	3.8	7.1	-	-	10.0
	9/23/2008	100.60	3.07	97.53	**1.3**	-	-	-	1.9	1.4	-	-
	12/15/2008	100.60	0.11	100.49	**2.2**	-	-	-	2.1	-	-	-
	3/16/2009	100.60	2.27	98.33	**77.6**	1.8	**7.4**	**24.4**	**20.6**	3.9	1.2	-
	6/25/2009	100.60	0.01	100.59	**5.4**	-	-	3.0	**11.4**	-	-	-
NYSDEC Standard/Guidance Value**					**1**	**5**	**5**	**5**	**10**	**10**	**5**	**50**

Attachment 11

Table 3
Summary of Historical Detections
Monitoring Data Results
Buckeye Pipe Line Company, L.P.
Railroad Avenue, Long Island City, NY

Well No.	Date	Casing Elevation* (ft.)	Depth to Water (ft.)	Water Table Elevation* (ft.)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	Cumene (µg/L)	Acetone (µg/L)
MW-9	6/10/2004	100.50	3.91	96.59	-	-	-	-	-	-	-	-
	9/30/2004	100.50	2.04	98.46	-	-	-	-	-	-	-	**51**
	12/30/2004	100.50	4.28	96.22	-	-	-	-	-	-	-	-
	3/10/2005	100.50	3.32	97.18	-	-	-	-	-	-	-	**81.2**
	6/13/2005	100.50	3.96	96.54	-	-	-	-	-	-	-	-
	9/27/2005	100.50	4.42	96.08	-	-	-	-	-	-	-	-
	12/30/2005	100.50	3.38	97.12	-	-	-	-	-	-	-	-
	3/27/2006	100.50	4.00	96.50	-	-	-	-	-	-	-	-
	6/29/2006	100.50	2.73	97.77	-	-	-	-	-	-	-	-
	9/15/2006	100.50	2.81	97.69	-	-	-	-	-	-	-	-
	12/6/2006	100.50	3.29	97.21	-	-	-	-	-	-	-	-
	3/22/2007	100.50	4.20	96.30	-	-	-	-	-	-	-	-
	6/12/2007	100.50	3.33	97.17	-	-	-	-	-	-	-	-
	9/5/2007	100.50	4.05	96.45	-	-	-	-	-	-	-	-
	12/10/2007	100.50	0.95	99.55	-	3.1	-	-	-	-	-	-
	3/25/2008	100.50	4.11	96.39	-	-	-	-	-	-	-	-
	6/23/2008	100.50	3.77	96.73	-	-	-	-	-	-	-	-
	9/23/2008	100.50	3.66	96.84	-	-	-	-	-	-	-	-
	12/15/2008	100.50	3.11	97.39	-	-	-	-	-	-	-	-
	3/16/2009	100.50	4.31	96.19	-	-	-	-	-	8.8	-	-
	6/25/2009	100.50	2.85	97.65	-	-	-	-	-	-	-	-
MW-10	6/10/2004	100.08	4.94	95.14	-	-	-	-	-	-	-	-
	9/30/2004	100.08	1.67	98.41	-	-	-	-	-	-	-	-
	12/30/2004	100.08	4.42	95.66	-	-	-	-	-	-	-	-
	3/10/2005	100.08	4.45	95.63	-	-	-	-	-	-	-	**71.3**
	6/13/2005	100.08	4.4	95.68	-	-	-	-	-	-	-	-
	9/27/2005	100.08	4.45	95.63	-	-	-	-	-	-	-	-
	12/30/2005	100.08	3.79	96.29	-	-	-	-	-	-	-	-
	3/27/2006	100.08	3.81	96.27	-	-	-	-	-	-	-	-
	6/29/2006	100.08	3.25	96.83	-	-	-	-	-	-	-	-
	9/15/2006	100.08	2.78	97.30	-	-	-	-	-	-	-	-
	12/6/2006	100.08	3.60	96.48	-	-	-	-	-	-	-	-
	3/22/2007	100.08	3.53	96.55	-	-	-	-	-	-	-	-
	6/12/2007	100.08	3.75	96.33	-	-	-	-	-	-	-	-
	9/5/2007	100.08	4.14	95.94	-	-	-	-	-	-	-	-
	12/10/2007	100.08	2.08	98.00	-	-	-	-	-	-	-	-
	3/25/2008	100.08	3.44	96.64	-	-	-	-	-	-	-	-
	6/23/2008	100.08	3.79	96.29	-	-	-	-	1.1	-	-	-
	9/23/2008	100.08	3.86	96.22	-	-	-	-	-	-	-	-
	12/15/2008	100.08	3.08	97.00	-	-	-	-	-	-	-	-
	3/16/2009	100.08	4.62	95.46	-	-	-	-	-	-	-	-
	6/25/2009	100.08	2.80	97.28	-	-	-	-	-	-	-	-
MW-11	9/30/2004	99.96	2.29	97.67	**15**	-	-	-	-	-	-	-
	12/30/2004	99.96	5.20	94.76	**5.5**	-	-	-	-	-	-	**92**
	3/10/2005	99.96	5.67	94.29	**4.44**	-	-	-	-	-	-	**-**
	6/13/2005	99.96	4.90	95.06	**18.8**	-	**11.0**	**5.89**	-	**24.1**	**10.6**	**-**
	9/27/2005	99.96	4.90	95.06	**17.2**	-	-	-	-	-	-	**120**
	12/30/2005	99.96	4.69	95.27	**72.8**	**60.2**	**306**	**441**	**60.0**	-	-	**120**
	3/27/2006	99.96	3.53	96.43	**3.8**	-	2.6	-	-	-	-	-
	6/29/2006	99.96	2.83	97.13	**-**	-	-	-	-	-	-	-
	9/15/2006	99.96	2.84	97.12	**1.6**	-	-	-	-	-	-	-
	12/6/2006	99.96	4.62	95.34	**2.0**	-	-	-	-	-	-	-
	3/22/2007	99.96	3.64	96.32	**4.4**	-	-	-	-	-	-	-
	6/12/2007	99.96	4.31	95.65	**11**	-	-	-	-	-	-	-
	9/5/2007	99.96	4.84	95.12	**3.4**	-	-	-	-	-	-	-
	12/10/2007	99.96	5.04	94.92	**4.4**	-	-	-	-	-	-	-
	3/25/2008	99.96	4.66	95.30	**3.4**	-	-	-	-	-	-	-
	6/23/2008	99.96	4.61	95.35	**220**	**6.3**	**10.4**	**22.4**	-	**17.8**	**15.8**	**169**
	9/23/2008	99.96	4.60	95.36	**119**	3.3	3.9	**6.1**	-	3.1	**8.6**	**59.9**
	12/15/2008	99.96	4.44	95.52	**19.6**	-	1.3	-	-	-	4.0	**61.4**
	3/16/2009	99.96	5.12	94.84	**8.3**	-	-	-	1.4	7.4	2.4	**374**
	6/25/2009	99.96	4.00	95.96	**29.9**	1.3	1.8	-	2.8	-	**5.2**	**65.7**
MW-12	9/30/2004	99.51	3.91	95.60	**1,100**	-	**1,600**	**2,300**	**410**	**1,100**	-	-
	12/30/2004	99.51	4.97	94.54	**1,200**	**96**	**930**	**1,600**	-	**600**	**67**	-
	3/10/2005	99.51	5.43	94.08	**746**	**-**	**717**	**1,540**	-	**1,360**	**-**	-
	6/13/2005	99.51	4.35	95.16	**628**	**-**	**1,070**	**1,460**	-	**5,270**	**-**	-
	9/27/2005	99.51	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	12/30/2005	99.51	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	3/27/2006	99.51	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	6/29/2006	99.51	3.22	96.29	**370**	**7.5**	**23**	**30**	**80**	**31**	**25**	-
	9/15/2006	99.51	3.7	95.81	**510**	**-**	**-**	**-**	**60**	**-**	**-**	-
	12/6/2006	99.51	4.34	95.17	**190**	**3.3**	**20**	**67**	9	**47**	**15**	-
	3/22/2007	99.51	4.79	94.72	**49**	-	**5.6**	**41**	**-**	**40**	2.7	-
	6/12/2007	99.51	3.68	95.83	**42**	-	**12**	**37**	**-**	**32**	3.5	-
	9/5/2007	99.51	4.38	95.13	**120**	4.5	**13**	**46**	**-**	**43**	3.0	-
	12/10/2007	99.51	3.55	95.96	**30**	**-**	**-**	**6.8**	**-**	**-**	**-**	-
	3/25/2008	99.51	3.52	95.99	**100**	**-**	3.9	**18**	**-**	**11**	2.5	-
	6/23/2008	99.51	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS
	9/23/2008	99.51	4.14	95.37	**372**	**13.7**	**130**	**70.1**	**32.5**	**296**	**15.6**	-
	12/15/2008	99.51	3.51	96.00	**629**	**15.7**	**120**	**68.1**	-	**123**	**20.9**	-
	3/16/2009	99.51	4.75	94.76	**1280**	**24.9**	**96.5**	**94.2**	**44.4**	**828**	**26.0**	**123**
	6/25/2009	99.51	2.10	97.41	**133**	**9.2**	**24.2**	**12.7**	**-**	**27.9**	**31.0**	10.1
NYSDEC Standard/Guidance Value**					**1**	**5**	**5**	**5**	**10**	**10**	**5**	**50**

Notes: *Elevation is relative to a designated benchmark.µg/L=micrograms per liter.
** Ambient Water Quality Standards/Guidance Values from New York State Department of Environmental Conservation(NYSDEC) TOGS No.1.1.1 Tables 1,3,5. Bold values indicate exceedences of NYSDEC Groundwater Standards or Guidance Values.
- = indicates that compound was not detected above the method detection limit (MDL).
NS: Indicates Not Sampled
MTBE: Methyl tert-butyl ether
NM: Indicates Not Measured